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ORIGINAL COMMUNICATIONS.

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SOURCES OF ERROR IN FUNCTIONAL TESTS OF HEARING.

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Functional tests of hearing are subjective, and as such require co-operation and accurate responses on the part of the patient. The tests require certain instruments and appliances which must be properly constructed and adapted to the purpose. The examiner must have a knowledge of the instruments used, a knowledge of the technique of functional examination, and be able to draw correct conclusions from the results obtained. From this combination of requirements, it is not strange that many errors should arise, nor is it strange that some observers are inclined to attach little importance to functional tests. The question has been frequently raised as to whether the knowledge gained by functional tests is sufficient to compensate for the time and trouble required in making them. While that particular phase of the question is not the subject of this paper, it seems in order to express the opinion that neither diagnosis, prognosis, nor rational treatment in many ear diseases, is possible without them.

A recent writer mentioned the disposition on the part of some to minimize their value and ventured the opinion that those who belittle the importance of these tests, usually possess very few instruments for making them and do not know how to use those which they have. Inability to verify diagnoses based upon functional tests, together with the more or less complicated technique probably accounts for much of the skepticism on this subject.

No attempt will be made in this paper to discuss the relative

value of the different tests nor their relation to diagnosis and prognosis; neither will it be possible to consider all of the sources of error in making such examinations. It will suffice to call attention to some of the more frequent errors and to suggest means of avoiding them. These errors may arise from: 1. Faulty constructed or poorly adapted instruments. 2. Failure on the part of the examiner to understand his instruments or to use them properly. 3. Failure on the part of the patient to promptly and accurately respond to the various tests.

The watch, the voice, the tuning-fork, the Galton whistle, and the various acumeters are satisfactory as hearing tests, but the tuning-fork and Galton whistle stand practically alone as instruments for making functional examinations. There is a great variety of tuning-forks on the market, each possessing some good qualities and most of them more or less serious defects. Tuning-forks may be divided into two general classes, those with weights and those without weights. The weighted forks have the advantage of being free from overtones, but are useless for testing bone conduction because of the jar transmitted through the handle, the sensation of which the patient is liable to mistake for sound. The chief defect in unweighted forks, especially those below C³ 1024 vibrations per second is the presence of overtones. Overtones are produced by short vibrations of the prong upon itself, while it is passing through its long vibration in unison with its fellow. A good test for overtones in a fork is to strike about the middle of the prong with some light, hard object as a pencil. The metallic ring is the overtone, and is one or more octaves above the true tone of the fork. In some forks two or more distinct overtones can be detected. In selecting a fork one should be chosen which has the least metallic ring when struck with a pencil. Overtones are especially objectional in testing the lower tone limits. In some of these cases the patient will give unmistakable evidence of hearing the low-toned fork when it is brought opposite his ear, while in reality he hears only the overtone which is one or more octaves above the true tone of the fork. In such cases the true lower tone limit is one octave or more above the apparent limit. Another objection to many of the forks is the long time which they continue to ring when once given their full initial vibration. If the object in making the test is only to determine whether the patient can hear the fork or not the long time which it may vibrate is no disadvantage; but if it is to be determined how long the patient can hear the fork, as in Schwa-

bach's test, then a fork should be selected which the normal ear can hear from 25 to 40 seconds. In the Schwabach test there are two objections to forks which can be heard longer than the time mentioned: 1. In making repeated tests in order to secure accuracy, much valuable time is lost while waiting for the fork to run down. 2. Repeated tests with forks which vibrate a long time are apt to wear out the patient's attention, so that after a few trials his replies are found to be uncertain. Before undertaking to make functional tests it is necessary to determine how long the normal ear can hear the fork used. The amount of impairment in any given ear may be expressed by a fraction the denominator of which represents the time a normal ear hears the fork, while the numerator shows the time the impaired ear hears it. Many of the published records of functional tests are of no value because the writer has failed to ascertain or neglects to state the time which the fork he used can be heard by the normal ear.

In comparing air conduction with bone conduction, it is generally understood that in the normal ear the fork should be heard when the handle is against the mastoid one-half as long as when the prongs are held opposite the meatus. While this is true in some instances, the relation is modified by certain conditions which do not seem to be generally understood. There is a wide variation in the relative time which different forks of the same pitch can be heard by bone conduction and by air conduction in the same ear. The shape of the fork, the size of the handle, and the temper of the steel each has an influence upon the relation between bone conduction and air conduction. I have two forks of about the same size, each giving 512 vibrations per second. Each can be heard by air conduction about 45 seconds. One can be heard by bone conduction 35 seconds, while the other can be heard by the same ear not over 15 seconds. Thus, it becomes apparent that it is necessary to establish a standard for each individual fork not only for air conduction, but for bone conduction as well.

In testing bone conduction it makes a decided difference upon what part of the mastoid the handle of the fork is placed, and also, whether the handle is allowed to touch the back of the auricle. In a series of cases recently tested in which there was no history of past or indications of present ear disease, three points of contact for the handle of the fork were selected as follows: 1. The tip of the mastoid. 2. A point behind the meatus corresponding approximately to the mastoid antrum. 3. A point immediately behind the

meatus, but in close contact with the back of the auricle. The average time which a given fork was heard on the tip of the mastoid was 25 seconds. Over the antrum 30 seconds, while in contact with the back of the auricle the same fork could be heard fully 40 seconds. Probably the best position for the handle of the fork is directly over the mastoid antrum. It also makes a difference as to the amount of pressure exerted upon the handle of the fork. In the series of tests already mentioned it was found that the fork could be heard five to eight seconds longer when deep pressure was made than when the handle was pressed lightly against the mastoid.

In testing air conduction it is a good plan to cover the patient's eyes and compel him to depend entirely upon his ears. When the patient can see that the fork is near his ear he is liable to imagine he hears it when the examiner knows that the fork is not vibrating. I have heard fairly sensible patients declare they could hear the fork when, to test their imagination, I held the fork by the prongs with the handle close to the ear. It is sometimes necessary to prove to the patient that his imagination is too vivid before accurate responses can be obtained. Whenever there is a suspicion of inaccuracy on the part of the patient the fork should be held in the hand so that the finger can be passed down along the prong of the fork, and thus gradually stop the vibrations. Often several seconds will elapse between the time the fork ceases to vibrate and the time the patient gives the signal agreed upon to indicate that he cannot longer hear it. In some cases a little time can be profitably spent training the patient to give prompt and accurate responses. Sometimes the tinnitus so closely resembles the sound of the fork that the patient is unable to tell when he has ceased to hear the vibrations. In such cases a fork of higher or lower pitch should be substituted. Repeated tests should be made for the sake of accuracy. In using the low forks the patient will sometimes insist that he hears the fork when he only feels the vibrations of air set in motion by the movements of the fork. Holding the open end of the fork toward the ear will obviate this difficulty. In making qualitative tests it is essential to keep the hair away from the ear, for if the vibrating fork comes in contact with a few stray hairs a sensation will be produced which the patient may mistake for sound. Some of these people, especially deaf-mutes, become exceedingly sensitive. In a case recently reported a deaf boy, though blindfolded, raised his hand regularly when the fork was

brought near his ear, whether the fork was vibrating or not. It was found that the fork being cold produced a sensation when brought near his ear, which he mistook for sound. After the fork had been warmed he was no longer able to respond when it approached his ear.

In the lower forks the vibrations transmitted to the handle is much greater in proportion to the volume of sound than in the higher forks.

In testing bone conduction for the lower tones, it is difficult to determine whether the patient hears the fork or feels the jar transmitted to his head. Some patients are able to differentiate between the two sensations, while others admit that they cannot be sure whether they feel the vibrations or hear the sound. Considering that the patient's mind is centered on the subject of hearing and remembering the influence of the imagination, it is fair to assume that the patient often deceives himself in the matter. However desirable accurate measurements of bone conduction in the lower tones may be, I am not aware that any plan has as yet been devised whereby this may be secured. This problem, with a number of others pertaining to functional tests, remains to be solved.

100 State Street.

AN UNUSUAL CASE OF HYPERPLASIA OF THE NASAL MUCOUS MEMBRANE.

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In January, 1901, Mr. M., student, 18 years old, of slender build, but in good general health, home in the country, came to me for nasal treatment.

From infancy Mr. M. had suffered from obstructed nasal respiration. His mother states that when an infant she noticed his nostrils were blocked and that he usually slept with mouth open. Mr. M. is positive that there was no nasal discharge, muco-purulent or other. Since his tenth year he has had every autumn "hay fever," the attacks of late years regularly getting worse and lasting from the middle of August to October; an "asthmatic" cough much aggravating the condition, also, the eyes being so affected as to require green spectacles. The cough and general debility would keep him in bed several days.

Examination shows great thickening of the tissues over all the turbinated bones as far as they are visible, i. e., whole length of the inferior turbinated, especially at the extremities; the posterior exhibiting characteristic livid and granular enlargements. Both middle and upper turbinates have like appearance posteriorly, the middle being abnormally large throughout. By anterior inspection the color of the mucous membrane is that noted in hypertrophic rhinitis. There is no noticeable mucous discharge. On the inferior part of the anterior lip of the left Eustachian tube is a small livid granulation. Right nostril is considerably narrowed by a septal spur. Both jaws are much contracted anteriorly with a high, arched palate, and the front teeth are badly crowded out of position.

January 19. Cut away with the Bosworth wire snare the posterior extremity of the left inferior turbinated. Found the tissues very dense and resistant, so that quite a little time was required for the amputation. There was a free hemorrhage at first and a later oozing that persisted into the next day. The piece cut off was cavernous and evidently composed mainly of fibrous tissue. In using Bosworth's snare in such a case I have found it helpful to convert it into an ecraseur by fastening one end of the wire to a

fixed point on the shaft while the other moves with the slide; thus an effective cutting as well as crushing action is secured. As Mr. M. could not allow his studies to be seriously interfered with, all subsequent operations were made at considerable intervals.

January 23. The snare was used on the anterior extremity of the left inferior turbinate, and February 4, on its middle part. April 8 operated on the posterior end of the right inferior turbinate, after having previously cut away the anterior end as well as the above mentioned septal spur. After the first operation, January 19, all bleeding was readily controlled with cotton tampons, and the patient continued his studies without interruption. He went home after the last operation in a vastly improved condition; nasal respiration was free and unobstructed for the first time in his life, his whole expression of face showed the immense relief that he had experienced.

Returning in the autumn, he reported that he had been comfortable all summer and had been able to work in the field without difficulty. The customary hay fever attack was light, he had but two or three bad nights from the cough and was able to be about every day; also, the eyes gave no trouble. In November I cut away all the remaining excess of tissue over the middle of both inferior turbinates with scissors and knife, which ended my operative treatment, as his respiration was all that could be desired. So far as could be made out by questioning and experiment, his sense of smell was not impaired.

April 7, 1902, a final examination shows respiratory passage right and left, roomy; mucous membrane over inferior turbinates, and anterior part of middle looks as in chronic catarrhal rhinitis, only there is no discharge. Occasionally the one or other nostril becomes somewhat obstructed, as in catarrh, which suggests a further treatment by local applications. As Mr. M. was having his teeth regulated during the winter, operation on the middle turbinates was thought unadvisable, the nasal condition being satisfactory to the patient. During a practice of more than twenty-five years, not having seen nor heard of a similar case, it seemed to me worthy of being recorded. If we accept the positive denial of any muco-purulent or other nasal secretion in early life, can this be considered a case of *congenital* hyperplasia of the nasal mucous membrane?

SECONDARY HEMORRHAGE ON THE FIFTH DAY AFTER TONSILLOTOMY.

BY LEE WEBER, M. D., DAVENPORT, IOWA.

Secondary hemorrhage after tonsillotomy being one of the dangers which every operator must be prepared to meet, whatever be his method of operating, and cases presenting unusual features being of interest and value, I desire to report the following case:

Miss A. Z., age 5, was seen at the request of Dr. F. Lambach, on account of enlarged tonsils and mouth breathing. The child was pale and anemic, and presented the usual picture of such cases. The tonsils were considerably enlarged, very hard and tough, rather oval in shape and projected more backward and upward behind the posterior pillars than toward the median line.

The cervical lymphatic glands were much enlarged and quite hard, with little tenderness on palpation.

Removal of the enlarged tonsils was decided upon and as the child was very tractable, being an ideal patient, and owing to her general condition, it was decided to not give an anesthetic.

The operation was done on the afternoon of February 16, 1902, both tonsils being removed with the tonsillotome.

The usual amount of hemorrhage followed the operation, and ceased entirely in about fifteen minutes. It was noted at the time of operation that the left tonsil offered considerably more resistance to the cutting blade than did the right one. The case progressed without event except a slight cough and by the third day the patient was feeling much better than before the operation, the enlarged cervical lymphatic glands had perceptibly diminished in size and food was taken without discomfort.

On the morning of February 21, Dr. Lambach was called to the house because the child had vomited a considerable quantity of blood. He found a slight oozing hemorrhage from the left tonsil which was checked by a gargle of dilute Monsel's solution. On the afternoon of the same day we were called hastily to the house because of renewed hemorrhage which had become alarming. When we arrived the child was unconscious, having been so for some minutes, was cold, pale, and with the circulation very weak. The hemorrhage had ceased. Dilute alcohol was administered by the

mouth, strychnine given hypodermically, and hot water bags placed to the body and limbs. Saline transfusion was considered, but was not necessary, as in a few minutes consciousness was regained and pulse and respiration improved.

An ice bag was applied to the left side of the neck and the child kept quiet. It was thought best to not attempt any local applications for fear of causing renewed hemorrhage. During the afternoon the patient had vomited large quantities of clotted blood, which had been swallowed. No more hemorrhage occurred for about two hours, when on making an attempt to vomit it was renewed and could be seen to come as bright blood from the upper part of the left tonsil. As soon as possible an application of adrenalin chloride, 1-1000, was made to the bleeding surface with a cotton swab, but it had little or no effect. Several applications of Monsel's solution were made, which checked the bleeding, and it did not recur.

About an hour later the remainder of the blood in the stomach was vomited, but the exertion did not cause a renewal of the hemorrhage and there was no more bleeding at any time. The child was kept recumbent with an ice bag on the neck for the entire night, small doses of Dover's powder given, and cracked ice to suck.

The patient was kept as quiet as possible in bed on liquid diet for several days, and nothing further interfered with recovery. It seems probable that in this case the coughing caused the loosening and removal of the clots in some of the wounded vessels, which allowed the oozing hemorrhage.

The blood was swallowed, causing the nausea and then the more violent exertion of retching and vomiting caused the later and more severe hemorrhage.

The two points of especial interest in the case are that a secondary hemorrhage should occur in one so young, 5 years, and that it should have occurred on the fifth day after operation; must be very unusual, as I have not been able to find, in any of the literature at my command, any reports of secondary hemorrhage after tonsillotomy occurring later than the third day, except the case reported in the February Laryngoscope by Dr. Dunbar Roy.

No. 2 Whitaker Building.

CORRESPONDENCE.

Evansville, Ind., March 10, 1902.

Editor The Laryngoscope:—

I have read with interest Dr. Dunbar Roy's article in the February number of the Laryngoscope on "Two unusual cases of hemorrhage following Adenotomy and Tonsillotomy." Allow me to report two similar cases from my practice.

Case 1. Miss R., age 7, hypertrophy of faucial tonsils and adenoids. Part of one tonsil was removed by a prominent local general surgeon. Under chloroform anesthesia (the family physician, Dr. L., administering the anesthetic), I removed the tonsils with a tonsillotome and the adenoids with forceps and curette. There was very little bleeding and the little patient got along nicely. Fourteen days after the operation she accompanied her parents to Henderson, Ky., on the steamboat, and while there she drank some wine. Coming back home in the evening she ran up the levee and on arrival at the residence the parents noticed that she was spitting up considerable quantities of blood. The family physician was sent for and he discovered that the blood came from the vault of the naso-pharynx. The Doctor at once sent for me, but, being engaged elsewhere, I did not reach the house until late in the night and found that the hemorrhage had stopped. The mother had given the child table salt by the handful, which produced nausea and vomiting and cessation of the bleeding. The patient lost a considerable quantity of blood.

Case 2.—Miss M., age 12, was referred to me by her family physician in Kentucky. She was brought to my office September 3, 1901, by her mother. She was a mouth breather, very nervous and pale, but seemed well nourished. On examination I found enormously enlarged tonsils, also adenoids in the vault of the naso-pharynx. On physical examination I discovered no contra-indications to the administration of an anesthetic.

The operation was performed in one sitting under chloroform anesthesia; my assistant, Dr. M. Ravidin, administered the anesthetic. I removed both tonsils with tonsillotome and the adenoids with forceps and curette.

My assistant remained at her bedside in the hotel until she came out from under the influence of the anesthetic. There was very little hemorrhage. Next morning I saw patient at my office and everything looked nice. With the usual advice as to diet and quietude I allowed her to return home. September 12, I received a letter from her family physician stating that Miss M. got along nicely after her return home—he having seen her every day—until the 10th of September, seven days after the operation, when he was hurriedly called to see the patient who had vomited a considerable quantity of blood. On arrival he found the hemorrhage coming from the tonsils and it took him considerable time before he succeeded in stopping it. Now the interesting points in my cases are, in the first case, secondary hemorrhage fourteen days after the operation; and, in the second case, seven days after. I am

Yours most respectfully,

S. J. Knapp, M. D.

DENVER, APRIL 15, 1902.

EDITOR "THE LARYNGOSCOPE":

I find I made a mistake in my article "Operation for the Removal of Septal Spurs," in the March number of the *LARYNGOSCOPE*. I spoke of using the "Detroit" hand-piece. I should have said the *Doriot hand-piece*. This hand-piece is operated by an all-cord engine and not by a flexible shaft. Very sincerely yours.

MELVILLE BLACK, M.D.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 216.)

THE NINETEENTH CENTURY—THE PRAE-LARYNGOSCOPIC ERA.

Laryngeal Phthisis.

Littré* seems to think a passage in "Diseases II." is a proof that Hippocrates, or rather the author of this Hippocratic treatise, had observed phthisis laryngea, because he alludes to ulcers in the tube of the lungs. If we are to suppose that this book had its origin in the School of Alexandria, where they were familiar with the dissection of the human body, this may be a valid conjecture.

Before the advent of laryngoscopy there was considerable progress made not only toward the correct understanding of tubercular disease, but towards the recognition of its manifestation in the larynx. Virchow has pointed out† how a mistaken interpretation of Sylvius de la Boe led him to confound small tubercular cavities in the lungs with suppurating conglomerate glands. Clinical observation had frequently noted the enlargement of the so-called conglobate glands associated with evidences of pulmonary phthisis. From this, and subsequently through the works of Morgagni, Cullen and many others, the conception gradually arose that there was a pathological connection between vomicae in the lungs and the enlarged lymph glands. This is a singular instance of how out of error much that is true in pathogenesis arose. We have seen Sylvius de la Boe interested in separating the conglobate from the conglomerate glands, and we need not, therefore, be surprised at finding him mistaken as to the cavity of the dilated conglomerate glands being identical with foci of suppuration in the lungs.

Morgagni.

The history of the growth of our knowledge of laryngeal phthisis is usually traced back to Morgagni. Again we note that growth means differentiation. Tuberculosis and syphilis are inextricably confused in the early accounts of phthisis laryngea. According to Morgagni in his discourse on the lesions of respiration‡, Fantoni had noted in the cadaver of a man the mucosa of the arytenoid carti-

* Littré: "Œuvres Complètes d'Hippocrate," Tome VII. p. 77.

† "Die Krankhaften Geschwülste" III, 621 et seq.—Ed. 1867.

‡ "De Sedibus et Causis Morborum." No. 12.

lages so ulcerated and thickened that there only remained a very small laryngeal opening through which the patient, who had lived in this condition a long time, had breathed with great difficulty. Morgagni then described the case of a woman of forty who had been asthmatic for some time, and she having died nothing was found in the lungs or brain to account for her symptoms. At Morgagni's suggestion, the larynx was brought to him. He opened it from behind and pus of a grayish color flowed out, and from such a situation that the swelling it caused must have projected into the larynx and produced dyspnoea. Notwithstanding this memorable case has been frequently cited as one of tubercular laryngitis, I am very much of the opinion that it was a case of syphilis. However that may have been, evidently it, with some other similar observations reported by Bonet, Santorini and others, impressed Morgagni with the necessity of directing attention to the larynx in cases of dyspnoea, not only at post-mortem examinations but clinically. He did not fail to lay emphasis on this point, and his remarks soon aroused interest in the study of such lesions.

Lieutaud, who, in a very inferior manner, continued the work of Morgagni, reported* several cases, which at post-mortem presented lesions in the larynx which may have been tubercular.

Petit (1790), Portal (1792), Sauvé (1802), Saignelet (1806), wrote theses on laryngeal phthisis in which it is difficult to separate the syphilitic from the tubercular cases, but in which the various symptoms and lesions common to both are set forth at length.

Matthew Baillie,† in 1793, noted frequent appearances in the lungs at post-mortem to which he gave the name of tubercle, but he declared they did not occur in the branches of the trachea "where there are follicles. They are solid or they may break down." Nevertheless, it would appear, in the edition published in 1825, after his death, that he had observed the walls of the trachea thickened and the mucosa covered by little hard tubercles accompanied by a scirrhus affection of the glands. He also referred to inflammation of the tracheal mucosa and its ulceration "where there are scrofulous abscesses of the lungs. The same appearances are observable in the mucous membranes of the larynx."‡

* "Histoire Anatomica Medica" Tom. II, Lib. IV., p. 297, seq. 1767. Obs. 65, 67, 67a, 68.
The last observation presents more satisfactory evidence of the lesions having been tubercular than the others.

† "Morbid Anatomy of Some of the Most Important Parts of the Human Body."

‡ The Works of Matthew Baillie, Vol. II, p. 84, et seq., 1825.

**Laryngeal
Tubercle.**

Whatever may have been the real conditions referred to by Bailie, Broussais* in 1806 noted white miliary tubercles in the larynx of a man dead of pulmonary phthisis. There was also an ulceration in the ventricles of the larynx. His observation seems to have been first published in 1816. Previous to this Bayle† had published his varieties of phthisis pulmonalis, the first of which was tubercular. He described its three stages, the state of tubercle, its softening, its cavernous or cystic stage. He is also said to have been the first to make use of the term "tubercular diathesis."‡

While, therefore, tubercle had been recognized, not only in the lungs but in the larynx, before Laennec's publications, he more clearly and definitely than others pointed out the characteristic lesion, to which he himself fell a victim, dying in 1826, at the age of forty-five. In his treatise on the Diseases of the Chest,§ he thus defines phthisis pulmonalis at the beginning of his book: "The existence in the lungs of those peculiar productions, to which the name tubercle has been restricted by modern anatomists, is the cause and constitutes the true anatomical character of consumption." He described their formation, regarding them as adventitious matter forming in the pulmonary tissue.

A very full and satisfactory account of the condition of the knowledge of laryngeal phthisis prior to Louis' celebrated work may be found in the thesis of Pravaz.|| Unfortunately we are still in a position to thoroughly understand the vivid impression made upon the author by the death of his mother from this formidable affection, and we also understand his bitter quotation of the expression of Asclepiades in regard to Hippocratic medicine where he says it was the contemplation of death. He says: "No one can doubt to-day that laryngeal phthisis may exist primarily." This to the modern reader is explained by the citation of such cases, cured by the administration of mercury.

There is a notice in a publication¶ in 1818 that creosote was used in the form of a fumigation of tar, and it was suggested that this might be useful in laryngeal phthisis, but as a rule treatment was regarded as of no avail.

The advent of the more exact methods of diagnosing pulmonary disease by physical examination, corresponding to the more

* "Histoire des Phlegmasies," 1816. Tome I, p. 372.

† "Recherches sur la Phthisis Pulmonaire," 1810.

‡ "Journ. de Med. Chirurg. Pharm., etc., An. XI, T. VI, p. 28.

§ Translated by John Forbes, 1823.

|| "Recherches pour servir à l'Histoire de la Phthisis Laryngée. Thèse de l'Ecole de Medicine de Paris," No. 56, 1824.

¶ "Dictionnaire des Sciences Médicales," 1818, Vol. XXVII, p. 264.

general study of its anatomical lesions, resulted in a considerable increase of attention given to tubercular lesions of the upper air tubes. The work of Louis* forms an integral part of the history of Phthisis, but in a work of more than 500 pages hardly fifty are devoted to the manifestations of the disease in the "tracheal artery," the larynx and the epiglottis. To the lesions of the latter he devoted especial attention. In 102 cases at autopsy the upper air tubes were examined and lesions were found—of the epiglottis 18, of the larynx 22, of the trachea 31. While he did not recognize, as did Broussais, tubercle in the larynx, he supplemented the work of Laennec by its careful description in the lungs. The work of Louis is more frequently quoted in laryngology as having given origin to the idea that the ulcers of the larynx in phthisis are due to the mechanical raspings of secretions, cast off from the tubercular lesions of the pulmonary tissue. This mistaken conception has hardly yet entirely disappeared from our nosology of disease, in spite of the early work of Rokitansky and Virchow. This was asserted not only in the first edition of his work, but repeated in the second edition in 1843. He seems to have been the first to use the term and draw attention to the existence of latent phthisis, a matter with which advancing sciences has made us more familiar.

While far less exhaustive and valuable we may note in the work of Andral in 1834† more accurate views than those of Louis as to some matters pertaining to laryngeal Phthisis. He gave a long description of it, noting the occurrence of tubercle in the larynx.

Barth, writing in 1839, referred to fifteen or sixteen authors who had by that time written on the subject of laryngeal phthisis. By far the most exhaustive and the most valuable was the work of Troussseau and Belloc‡, which still remains a classical authority on the subject. Their differentiation of the lesions was still far from perfect, but they were aware of this confusion in the works of previous writers. Thus they quote Borsieri as saying in 1826, "There are those who think ulcers of the larynx and the aspera arteria, because they are not situated in the lungs, should be excluded from phthisis. However, from these lesions also the body often wastes away, and is consumed by a slow fever just as in the parent disease." Their assertion that he was the first to recognize laryngeal phthisis as in itself an essential disease is, as we have seen, hardly accurate. They included in their category of laryngeal phthisis:

Louis on Phthisis and Catarrhal Ulcers of the Larynx.

"Latent Phthisis."

Troussseau and Belloc.

* "Recherches Anatomico Pathologique sur la Phthisis," A. Louis, 1825.

† "Clinique Médicale."

‡ "Traité Pratique de la Phthisie Laryngée de la Laryngite Chronique, et des Maladies de la Voix," 1837.

1. Simple laryngeal phthisis produced by the common causes of inflammation in general, without pulmonary phthisis.
2. Syphilitic laryngeal phthisis.
3. Cancerous laryngeal phthisis.
4. Tubercular laryngeal phthisis.

Notwithstanding their recognition of tubercle in their last division, we see in their first the influence of the catarrhal theory of Louis, and the evidence of insufficient differentiation and faulty diagnosis, while their other two classes give evidence of a considerable advance in differential diagnosis over the works of their predecessors. Practically, however, when we come to study the reports of many of the cases classified thus, we will find considerable confusion. In this respect the slightly later memoir of Barth* gives evidence of a more correct understanding, as he separated more intelligently the syphilitic from the tubercular cases. We may now note the beginning of a more careful limitation and definition of the word tubercle. Hodgkin† notes a distinction, first that the term is applied to the shape or contour of a formation, and second to adventitious deposits as first used by Laennec.

Rokitansky.

We have now arrived at the time of Rokitansky, who inaugurated a system of study of morbid lesions, which was far in advance of anything which had yet appeared in Medicine. Many of his ideas are now rejected, but many more contained the germs of doctrines which still rule in the field of pathological medicine. In accuracy they were far in advance of contemporaneous research, and rapidly gained almost universal acceptance, especially his errors. He also looked on tubercle as an exudate of coagulated protein stuff, and in this era, when the knowledge of the cell was still in its infancy, he asserted that this exudate was embryonic tissue, or Blastema which had not yet undergone organization.‡ He nevertheless recognized that the ulcers occurred from the breaking down of this tubercular exudate. He regarded primary tuberculosis of the larynx as an exceedingly rare affection. The lesion of tubercle was more carefully described than ever before, and at last we note there is here§ no indication of his confounding it with syphilis. In continuing the history of the old conception of tubercle, I need only refer to the

* Mémoire sur les ulcerations des voies aériennes. "Archives Generales de Medicine," 1839, 3me, serie No. 5, p. 137.

† "Lectures on the Morbid Anatomy of the Serous and Mucous Membranes," by Thomas Hodgkin, 1840, Vol. II, p. 132.

‡ "Handbuch der Path. Anat.," 1846, B-d. 1, p. 391.

§ L. C., Vol. III, p. 36.

paper of Rheiner, ten years later*, in which again appeared the idea of Louis, that the ulcerations of laryngeal phthisis are mechanical and catarrhal in their origin.

We may here take note of matters of further interest in the works of Rokitansky. In spite of his careful observations he spoke of the existence of dilatation of the larynx, corresponding to the condition of bronchiectasis in the lungs. He dealt in a systematic way with the hyperæmia and anæmia, the acute and chronic inflammations of the mucosæ of the upper air passages, their hypertrophy and atrophy, noticing the changes in the glands and describing polypi as a result of inflammatory action. It is a little difficult to understand the nature of the condition he refers to as blennorrhœal catarrh and stenosis of the larynx. Besides his mistaken conception of tuberculosis, he more accurately described the exudative processes of croupous inflammation, dividing them into several varieties, including the "true croup" of children. He spoke of the lesions in the air passages of variola and typhus fever as submucous processes involving ulceration of the mucosa and perichondritis. He described benign epithelial growths, mucous polypi, and the laryngeal excrescences of syphilis and tuberculosis. Fibrous tumors are also noted as well as malignant growths. In short, in the pathology of the larynx as well as in that of other regions we cannot fail to remark the great services rendered by Rokitansky. Unfortunately lesions in the air passages above the larynx did not receive the same careful study at his hands.

As a contrast to the importance which the word tubercle has assumed in our terminology, the reader of the medical literature of this period will find much said of another phenomenon of disease in the larynx described by Bayle. Among the conditions which later studies in pathology have banished from the nosology of disease as an entity in itself, we frequently recognize the term Oedematous Laryngitis. The early treatise of Bayle† in 1817, however, cannot be justly blamed for having failed to give the term its proper place, for the author declared that it was a stage of many local and general diseases. Nevertheless many subsequent writers accepted the designation as creating a proper basis of classification for many cases. Sestier,‡ especially, in a voluminous work in 1852 attempted to bring many fundamentally dif-

Oedematous
Laryngitis.

* "Virchow's Archiv," Bd. V, 1853, p. 534.

† "Œdème de la Glotte ou Angine Laryngée Œdemateuse. Dict. des Sciences Médicales." T. 18, p. 505.

‡ "Traité de l'Angine Laryngée Œdemateuse," 1852.

"Ludwig's
Angina."

ferent pathological conditions into one category on this basis. Some years before this D. Ludwig* described a clinical condition arising from infection of perilaryngeal tissues which is still described under his name. "Ludwig's Angina," on any basis of etiological classification, in spite of its peculiar condition of board-like hardness, deserves, as little as Bayle's "Œdematous Angina," a place in modern nosology.

The Cell.

We cannot proceed further in an intelligible account of any part of the history of medicine without a few words as to the history of the discovery of the cell. It would be difficult to understand how the early microscopists failed to note more frequently and to study more carefully this unit of all living matter in the animal and vegetable world, were we to forget the small range of their magnifying glasses, the imperfection of the correction of the aberration of light, and more especially the imperfect technique in preparing solid tissues for microscopic examination. An English physician, Robert Hooker, in 1665, examining with a glass a little section of cork, saw cavities in it which he called cells and likened to a honey comb. Subsequently, in 1671, Grew and Malpighi comprehended something of the significance of this discovery of the structure of the vegetable kingdom. It was another Englishman, Robert Brown, who first noted, in 1831, that in many families of plants a circular spot which he named areola or nucleus was present in each cell; and in 1838 M. J. Schleiden asserted that a similar spot or nucleus was a universal elementary organ in vegetables. The same phenomena had begun to be observed in animal structures, and in 1839 Schwann, a pupil of that man of genius, Johannes Müller, announced the important generalization that there is one universal principle of development for living organisms and that is the formation of cells.† The fruits of the labors of these men and others, their predecessors and contemporaries, were spread broadcast over all fields of medicine, and Virchow's aphorism "Omnis Cellulæ Cellula" became the shibboleth of pathology after the middle of the century.

*Epithelium of
the Mucous
Membranes.*

Henle‡, as early as 1838, declared that the mucous membranes of the body are lined with epithelium, and in regard to the nasal mucosa he said: "From the openings of the nares the pavement epithelium extends internally for some distance upon the nasal sep-

* "Medizinische Correspondenz Blatt des Wurtem. Arzte, Verein." B-d. VI, No. 4, Feb. 5, 1836, p. 21.

† Vid. Sir William Turner's Presidential Address, "The Popular Science Monthly," October and November, 1900; also Henneguy : "Lecons sur la Cellule," 1896.

‡ "Archiv. für Anatomie, Physiologie," etc., 1838, p. 103.

tum as well as upon the alæ nasi, on a line which, upon the septum and upon the lateral walls of the nose, one may imagine as being drawn from the free border of the nasal bone to the anterior spine, occurs the change from a pavement epithelium to a ciliated epithelium." Later, in 1843*, he more exhaustively treated the whole subject.

William Bowman† in 1845 described the sweat glands of the skin as tubular diverticula. He subsequently‡ described similar structures in the nasal mucosa, which in the meanwhile Kölliker§ had also noted in the mucosa of the upper part of the nose, and to which he had given the name of Bowman's glands. The racemose glands of the mucosa, as we have seen, had long since been known. Henle (l. c.) had regarded the tonsils as of a similar nature, and even as late as 1866|| he is somewhat obscure as to their character, retaining the old name suggested by Sylvius de la Boe of the conglobate glands of the pharynx. It was Kölliker¶ who first properly described these structures at the base of the tongue and in the fauces. He studied them in their simple forms in animals, but while he described the folds and depressions of the mucosæ and the follicles in their walls and the epithelium, the finer structure of the lymphatic network escaped the comparatively feeble powers of his microscope. He described the normal tonsils as "Balg-Drüs'en," i. e., closed, ductless glands developed in the walls around the depressions in the mucosa.** Much contention arose as to their nature. Henle (l. c.) Sappey††, Sachs†† and others regarded them as true acinous glands, the lymph nodes being the acini and the invagination of the epithelium we call lacunæ being regarded as ducts. One may see in the plates of Sachs the errors into which this school fell. Sappey, in a later edition of his great work, failed to repeat this explanation of the tonsils. Brücke had also declared the tonsils were simply lymph glands, and Billroth§§ called them

The Tonsils.

* *Histoire des Tissus*, in the "Encyclopédie Anatomique," Vol. VI.

† *The Physiological Anatomy and Physiology of Man*, Todd and Bowman, Vol. I, Cap. XIV, pp. 406-426, 1845. Also to be found in "The Collected Papers" of Sir W. Bowman, 1892.

‡ l. c. II. The second volume was not published until 1856.

§ "Handbuch der Gewebslehre," 1852.

|| "Handbuch der Eingeweidelehre des Menschen."

¶ "Mikroskopische Anatomie, oder Gewebslehre des Menschen," Bd. II, 2, 1852.

** Huxley: "Quarterly Journal of Microscopic Science," Vol. II, 1854, p. 82, who translated Kölliker's work into English, declared in his luminous language, "So far as its structure is concerned, in fact, the tonsil exactly represents a lymphatic gland, developed around a diverticulum of the pharyngeal mucous membrane."

†† "Traité d'Anatomie," T. 3, p. 43, Ed. X, 1857.

|| "Müller's Archiv.," 1859, p. 196.

§§ "Beiträge zur Path. Histologie," 1858.

follicular glands. Although the latter thus agreed with Kölliker and Gerlach in properly regarding them as part of the lymphatic system and related to the Malpighian corpuscles of the spleen, their conception of them was that the follicles, or, as we call them, the nodes, were really closed sacs holding grumous material, the round cells being apparently held in solution. The finer inter-cellular structure was yet to be elucidated by the investigations of His in 1862, and the curious arrangement of lymphoid tissue around the juncture of the food and air passages was pointed out by Waldeyer in 1884*, and "Waldeyer's Ring" is now a well known but as yet little understood apparatus.

The structure of the faacial tonsils, therefore, had been largely elucidated before the development of the specialty of laryngology, and the same may be said of their abscission, which indeed we have seen fully described in the very earliest of medical annals. Even Middeldorp had already described† his method of ablation by means of the galvano-cautery snare. Before this the original forms of the tonsillotome now in use had been devised. The inception of the *Tonsillotomes*. McKenzie tonsillotome may be seen on referring to Bell's "System of Surgery," published in 1791 (Vol. III, p. 87). This was modified in 1828 by Philip Lyng Physick‡, who first used it for amputating the uvula, adapting it subsequently§ to the tonsils, and using a forceps to drag them through the loop of his instrument.

Out of this grew another device for the same purpose. Fahnstock||, four years later described the instrument which was adopted and modified somewhat in France, and is now known under his name or that of Matthieu.

Horace Green. One of the striking incidents in the history of laryngology was the storm aroused in America, in the decade preceding the announcement of Garcia, by the persistent claims of Horace Green. The question as to whether it was possible to introduce, per vias naturales, a probe into the box of the larynx seems, on the eve of the discovery of the laryngoscope, to have been the most inconsequential of contentions, yet it excited in New York, and to some extent in London and Paris, the bitterest feelings of resentment, anger and opposition. The only explanation of the importance which was at the time attached to this contention would seem to have been the latent idea, that if they once succeeded in performing this feat of

* "Deutsch Med. Woch., May 15, 1884, p. 313.

† "Galvanocaustic," 1854.

‡ "American Journal of the Medical Sciences," 1828, Vol. I, p. 262.

§ I. c., Vol. II, p. 116.

|| "American Jour. Med. Sc., 1832, Vol. XI, p. 249.

legerdemain, all the ills of the larynx would be cured. But if one may conjecture that this was the idea which lent importance to the controversy fifty years ago, it is impossible to fathom the reason which has occasionally led writers since then to regard this episode, in the history of laryngology, as anything more than a lamentable example of how coteries of medical men will insult one another, and transgress the bounds of decency in their discussion of a trivial matter. We have seen how Hippocrates referred to passing tubes into the air passages, and how it is mentioned in all *præ-Renaissance* medical writers. We shall see later in the history of intubation, how Desault, Loiseau, Bouchut, fully demonstrated the possibility of introducing instruments into the larynx from above. Horace Green was persecuted and reviled for claiming he could perform this operation, but this is only a part of the story. He laid himself open to criticism by claiming that by this procedure he could apply medicaments which would cause the cure of various pulmonary and laryngeal lesions, which the same vastly more accurate manoeuvres, guided by the laryngoscope, are to-day unable to accomplish. His pathology, resting on the half comprehended ideas of Louis, was so erroneous and crude as to secure no support from his more scientific colleagues.

Very frequently à new triumph of dexterity or invention in any department of surgery leads to the erroneous assumption that because a difficulty of technique has been overcome, a new era in surgical therapy has been inaugurated.

As early as 1818 Bretonneau* had carried a probang over the ary-teeno-epiglottic ligaments and expressed fluids from the sponge at this point, but Troussseau denied that the interior of the larynx was reached by him.

Troussseau and Belloc in their great work, published in French first in 1837 and translated into English in 1841, described a method of making applications to the larynx which leaves us also in considerable doubt if they ever really succeeded in placing any medicament in the larynx itself. Their own doubts as to this are emphasized in the scepticism which Troussseau later evinced towards the assertions of Green, who, however, was finally acknowledged by him to have succeeded in entering the larynx. Horace Green, in 1846, published his "Treatise on Diseases of the Air Passages, Comprising an Inquiry into the History, Pathology, Causes and Treatment of Those Affections of the Throat Called Bronchitis, Chronic Laryngitis, Clergyman's Sore Throat, Etc." In 1840 he had

* "Traité de la Diphtherie."

reported a number of cases of laryngeal and bronchial disease to the New York Medical and Surgical Society as cured by intralaryngeal applications. His statements, while finding some support, were received with incredulity by a large number of his hearers. It was thought and persistently argued that it was impossible in practice to introduce instruments into the larynx. He had made his first successful attempt in 1838, a year after the publication of Trousseau and Belloc's work in France. He was subsequently charged with having derived his ideas from this book and having failed to acknowledge it. His favorite, almost his sole, local application was a 40—80 grains to the ounce solution of nitrate of silver. His laryngeal applicators had practically the same curves as those now in use. A number of prominent medical men testified to the accuracy of his statements as to the practicability of intralaryngeal applications. Immediately the book met with the bitterest reception on the part of the medical press.*

It would be profitless to follow the history of all the bitter controversy of the time. He was attacked with savage malignity, but vulnerable as were many of his other ideas, he nevertheless succeeded finally in proving that he could enter the larynx with his applicator. In this claim he was firmly supported, in the end, by the leaders of the profession in New York, and although even as late as 1855 Erichsen† in London, while admitting that the probang might be carried to the vocal cords, decided that it could not be introduced further.‡ Nevertheless in the course of the bitter contest Dr. Green was compelled to resign from one of the medical societies in New York and was even threatened with expulsion from the Academy of Medicine. The matter was fully discussed there in 1855, and an unfavorable report was made by a committee appointed to investigate his assertions. This was, however, laid on the table. He finally fully established his claims to be able to enter the larynx, but he did not succeed in proving the further claim of his ability to inject medication into the bronchial tubes and tubercular cavities of the lungs. Green eventually somewhat receded from this position, saying that he could inject it below the

* Something of this may be found in the "Boston Medical and Surgical Journal," Dec. 16, 1846—*et seq.*

† "Lancet," Nov. 24, Dec. 1, 1855.

‡ "Bull. de l'Acad. de Medicine," 1858, Vol. 24, p. 101. Trousseau admitted that "to Horace Green belongs the honor of having methodically and systematically treated diphtheria when it occupies the larynx, by caustics introduced by the means of a little sponge. A little later Loiseau carried solutions of tannin, etc., into the larynx."

trachea. He grossly exaggerated the efficacy of these topical applications, saying that he had produced thereby astonishingly ameliorating effects with his nitrate of silver.

Doubtless in many cases he was self-deceived by a faulty diagnosis and by his superficial knowledge of pathological anatomy. There is, however, no doubt that he greatly benefitted many cases of simple chronic catarrhal inflammations of the pharynx and larynx, and his success in obtaining a large clientele doubtless had something to do with the jealousy of his confreres.*

THE LARYNGOSCOPE.

We have now passed in review events of interest to us in the first half of the wonderful century just completed. Before we proceed further and enter directly upon that era in which laryngoscopy created a new field for scientific endeavor and observation, let us not forget the advance in that intellectual evolution, that most important and all-pervading element in the history of civilization, which the Germans, after their wont, have rolled together in one word and called the "Zeit-Geist." After the French Revolution there was hardly an obstacle in the world to the advance of science —none except the bigoted but almost impotent sentiment of the Church. The fagot, the rack and the boot, prison and exile, had long since passed away from the horizon of possibilities in the personal prospect of the man of Science. From the burning of Bruno and the degradation of Galileo to Wilberforce's undignified and maladroit taunt against the Darwinians at Oxford, a period of scarcely two hundred and fifty years had elapsed. It needed not Huxley's cutting rejoinder to remind the world that ecclesiasticism was no longer an efficient engine of intellectual tyranny.

The century had hardly opened when we find the idea existent that it might be possible, by means of a mirror to see into the larynx†. Bozzini seems to have drawn on himself an undeserved amount of criticism by the publication in 1807 of a brochure‡, describing a

The Laryngoscope of Bozzini.

* For a list of the works of Horace Green see his obituary notice in "The New York Medical Journal," Jan., 1867, p. 316.

† In McKenize's early account of the history of the laryngoscope he committed the error of referring to Celsus as having been familiar with the use of dentists' mirrors. He evidently mistook the word specillum, meaning a probe, in "De Medicina," VII, c. XII for speculum, meaning a mirror. He was also wrong in supposing that Levret, in the eighteenth century, had any glimmer of the possibilities of the idea of laryngoscopy in recommending a polished steel tongue depressor in examining the pharynx.

Vid.: "Observations sur la Cure Radicale de Plusieurs Polypos de la Matrice, de la Gorge, et du nez," 1749.

‡ "Der Lichtleiter oder Beschreibung einer einfachen Vorrichtung und ihrer Anwendung zur Erleuchtung innerer Höhlen und Zwischenräume des lebenden animalischen Körpers," von Philip Bozzini, "der Medizin und Chirurgie Doctor," Weimar, 1807.

I am indebted to other sources, chiefly Morrell McKenzie's works, for an account of this brochure.

double canula with a mirror placed at an angle at the end, which was supposed to transmit light through one compartment, and reflect it from the mirror on to the parts examined, whose image, received on the mirror, was reflected back to the eye through the other compartment. It was supposed, singular to say, that the light passing in would interfere with the perception of the reflected image if one tube was used. A wax candle with a reflector behind it supplied the illumination. This instrument was used successfully. With it and others, Bozzini claimed to be able to inspect the various canals of the body, among them, the larynx. Of course this contrivance was too imperfect to attract any attention to the idea, but the invention of Babbington, and that of Cagniard de la Tour, were practically the present instrument. Exhibited before scientific bodies it is singular, but instructive, that these should not have attracted the notice which thirty years later was given to Garcia's invention.

Babbington In 1829 Benjamin Babbington presented to the Hunterian Society* "an oblong piece of looking glass, set in silver wire, with a long shank. The reflecting portion was to be held against the palate, whilst the tongue was held down by a spatula." The doctor proposed to call this contrivance a glottoscope†.

Cagniard de la Tour. Fournié says* that 1825, M. Cagniard de la Tour introduced into the back part of his own throat a little mirror, hoping that by the aid of the solar rays and of a second mirror he could see the epiglottis and even the glottis, but he was only partly successful.

Senn. There is still another record of this date, which is interesting in connection with the foregoing as illustrating how the idea was hovering in the air long before Garcia. Senn § in 1827 tried to use a small mirror in the pharynx to see the parts below. He used no illumination and supposed his failure was due to the small size of the mirror. Again we find a great London surgeon, who appreciated some of the possibilities of such an instrument in 1837. **Liston.** Liston|| declared: "The existence of this swelling (of the laryn-

* "London Medical Gazette," III, 1829, p. 555.

† According to McKenzie, Babbington's patient sat with his back to the sun, the rays of which were reflected into his throat by an ordinary hand mirror. In McKenzie's book, "The Use of the Laryngoscope," 1865, p. 14, the laryngeal mirror of Babbington is illustrated, but in the original notice here cited, there is no reference to the method of illumination, except that a strong light is necessary.

‡ "Physiologie de la Voix," p. 352—quoting from the "Journal de la Institut." No. 225 1825.

§ "Journ. des Progrès," 1829, p. 231. Note—(quoted by McKenzie I, c.)

|| "Practical Surgery," 1837, p. 350, by Robert Liston.

geal mucosa) can often be ascertained * * * by means of a speculum; by such a glass as is used by dentists, on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards and carried well back into the fauces, a view may often be had of the parts."

Baumes in 1838* exhibited at the Medical Society of Lyons a Baumès. mirror the size of a two franc piece, which he described as being very useful for examining the posterior nares and larynx.

Much more earnest but scarcely so successful were the efforts of Troussseau and Belloc to see the parts intra vitam, with which their work on laryngeal phthisis in 1837 was concerned. I may quote, directly from them, their own experience and that of others I have not thus far mentioned.

"For several years we have been occupied with the construction *Selligue*. of a speculum laryngis. The one of M. Selligue is known. He is a very ingenious mechanic, who affected himself with laryngeal phthisis, from which he had entirely recovered, made for his physician a speculum with two tubes, of which one served to carry the light to the glottis, and the other served to carry back to the eye the image of the glottis reflected in a mirror placed at the gutteral extremity of the instrument. * * * The use of this is very difficult, and there is only about one patient in ten who can bear its introduction. Indeed it is of a volume which occupies the space comprised between the free border of the velum palate and the superior surface of the tongue." A similar instrument, the description of which we may note corresponds with that of Bozzini, was made for them, but so unsuccessful were they with it they denied it was possible for Bennati† to see the glottis with the instrument of Selligue. "He might have seen the epiglottis or the superior opening of the larynx, but as for the glottis, it is situated at such a depth and in such a manner that it is impossible to see it with the speculum even in the cadaver, while the irritation of the pharynx in the live subject renders it still more inaccessible, even in those who are most accustomed to it." This emphatic expression of a negative opinion as to the performances of others, was characteristic of the man who later in life, at first obstinately refused credence to the practicability of Green's topical applications, and Bouchut's intubation of the larynx.

* Compte Rendu des Travaux de la Société de Médecine de Lyons, 1836-1838, p. 62.

† Bennati, in a footnote to the 3d edition of his "Recherches sur la Voix Humaine," describes the instrument here referred to.

Worden.

Adam Worden* suggested the use of refracting prisms to carry the light and the line of vision to parts within the larynx, the ear and the vagina, through variously devised canulae. He claimed that in one case he was able to see the pathological condition of the larynx.†

Avery.

This idea later also occurred to Ephraim Cutter in America,‡ about the time laryngoscopy became elsewhere an accomplished fact. McKenzie (I. c. p. 22) gives a full description and an illustration of the laryngoscope of Avery invented in London in 1844. A small lamp attached to a head piece was worn on the forehead with a reflector behind it. A speculum similar to Bozzini's, except with a single tube, was used to hold the reflecting mirror.

The collection of these notes seems to make a respectable prælaryngoscopic history of the laryngoscope. How completely the idea, dwelling in the minds of men, had failed to take root, is to be noted in the remark of Friedrich, I have quoted, regarding the impracticability of extending to the larynx any method of physical examination.

Manuel Garcia.

These are the brief words with which Manual Garcia in 1855 explained his device for examining the larynx: "The pages which follow are intended to describe some observations made on the interior of the larynx, during the act of singing. The method which I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent, in the throat of the person experimented on, against the soft palate and uvula. The party ought to turn himself towards the sun, so that the luminous rays, falling on the little mirror, may be reflected on the larynx. If the observer experiment on himself he ought by means of a second mirror to receive the rays of the sun and direct them on the mirror which is placed against the uvula.§

Garcia was entirely unaware of the previous attempts to accomplish his purpose with devices, some of which were identical with his own. His invention, great in utility as it was in the hands of medical men, was merely an incidental contrivance in those of the earnest teacher of singing, who desired to see the apparatus which produced the sounds he was endeavoring to train into harmony, and the remainder of his communication is largely devoted to the con-

* "London Medical Gazette," Vol. II, 1844, p. 256.

† "Monthly Journal of Medical Sciences," 1845, p. 552.

‡ A contribution to the History of Laryngoscopy by Louis Eisberg, M.D. "Archives of Laryngology," 1883, Vol. IV, p. 122.

§ Observations on the Human Voice, by Manual Garcia, Esq. Received March 22, 1855; Proceedings of the Royal Society of London, 1855, p. 399.

clusions he drew from what he saw in his own throat of the various laryngeal movements during the act of musical phonation. The announcement, therefore, was chiefly a demonstration of auto-laryngoscopy.

The crux of the difficulties which had hitherto prevented the utilization of this device which had, as we have seen, been so many times proposed, is evidenced in the notice of Garcia's communication which appeared in Paris.* "M. Garcia has the faculty of supporting in the pharynx and at the isthmus of the fauces the prolonged contact of foreign bodies without provoking in him efforts at vomiting." Commenting on this the editor said: "As for the ingenious procedure by which he was able to see the glottis in function, I hope indeed soon to be in a position to repeat it myself." This latter remark is an early hint as to the interest aroused by the announcement that it was possible to see a puzzling, interesting, familiar, but hitherto invisible physiological phenomenon, but it bore no trace of any thought as to the vast possibilities in the way of studying pathological phenomena.

Difficulties of
Technique.

It is thus that Ludwig Türck relates† how his attention was directed in Vienna to the matter in 1857: "Half through accident, without knowing of my predecessors, I came to the idea of using a small mirror for the investigation of laryngeal disease. First, as I was showing Professor Ludwig the internal laryngeal structures of a patient in my hospital division, I learned of Garcia's investigations." From that it would appear that Türck had himself invented an instrument before he knew of Garcia's. Others declare that Garcia's communication was in his hands before he came upon the idea. However this may have been, certain it is that Türck had worked at the problem before Czermak took it up. The latter, however, preceded him in the public announcement of his studies.

Ludwig
Türck.

In March, 1858, there appeared a publication‡ upon the laryngeal mirror in one of the Vienna medical papers. It was by Professor Czermak, who said that Türck some time previously had been attempting to use some of Garcia's instruments. Czermak borrowed some mirrors of Türck for the same purpose, and his paper consisted only of some remarks on his experience, but he

Johann
Czermak.

* M. Segond: "Gazette Hebdomaire de Medicine et de Chirurgie," Nov. 16, 1855. No. 46, p. 816.

† "Klinik der Krankheiten des Kehlkopfes," 1866.

‡ Ueber den Kehlkopfspiegel, von Prof. Joh. Czermak: "Wiener Med. Wochenschrift," No. 13, p. 196, March 27, 1858.

**Controversy of
Türck and
Czermak.**

urged all physicians to make a trial of them. He said that Türck and Garcia used sunlight, but he made use of lamplight and advised the employment of a "large perforated concave mirror for reflecting either the sun or artificial light." Subsequently he very correctly asserted* that but for this invention of the reflecting mirror, laryngoscopy would have been "a dead born child." He urged in his first communication that by persistent practice difficulties in the technique may be overcome. Czermak's first device for fixing the head mirror seems to have been to hold the frame of the mirror between the teeth, Semeleder adapting it to a spectacle frame. (1858). Whatever may have preceded this, it is evident on a perusal of the literature of the subject at this period what an impulse Czermak's brief notice gave the whole matter. It aroused the languid interest of others, and soon excited the active resentment of Türck. Less than two weeks after this first communication in a medical journal, Czermak gave a public demonstration of the use of the laryngoscope†. At this meeting Türck was present and claimed priority as the first to employ it for diagnostic purposes‡. This Czermak admitted.

Soon followed Türck's own publications§. Jealousy and strife soon began between the two men, and the history of it is an undignified record, the relation of which would serve no good purpose but to exhibit the folly of it and the harm such incidents do to the posthumous fame of otherwise distinguished men||.

**Rhino-Pharyn-
goscopy.**

Czermak soon opened up another region in the throat to examination. He turned his mirrors upward and demonstrated the pharyngo-nasal cavity, in Buda-Pesth, July 29, 1859¶. Very shortly after this, Voltolini took the matter up** and still further developed the technique, abandoning the palate retractor used by Czermak. The latter in his early attempts at post-rhinoscopy had also attempted the use of double mirrors, one placed at an angle above the other to show the choanæ. Czermak also introduced a

* "Der Kehlkopfspiegel," 2d Edit., 1863.

† "Zeitschrift der Gesellschaft der Aerzte," No. 17, April 26, 1858. Sectionsbericht: Sect. f. Physiologie und Pathologie, p. 271.

‡ See also: A. O. Beilage zu, No. 16, "der Wiener Medizin. Wochenschrift," April 17, 1858.

§ "Zeitschrift der K. K. Gesell. der Aerzte zu Wien," No. 26, June 28, 1858, p. 401.

¶ Lists of the numerous contributions of Türck and Czermak to the literature of the subject may be found appended to their later more voluminous works.

|| "Der Kehlkopfspiegel," etc., 1860, von Joh Czermak, also; "Deutsche Klinik," No. 21, P. 202, 1860. "Die Besichtigung der Tuba Hustachii," etc.

** "Virchow's Archiv," No. 21, p. 45, 1861.

mirror through a tracheal opening and demonstrated the under surface of the vocal cords. The mirrors at first and for long afterward varied in shape and size, many having bent handles. There were many subsidiary devices which complicated, but did not improve the technique, and early in the history of laryngoscopy we may note the old idea of Aranzi by which sunlight was admitted through a hole in a shutter of a dark room and allowed to fall, either directly or through a water bottle, into the nostrils or mouth of a patient. This was rendered more efficient by the use of a deflecting or reflecting mirror*.

Voltolini invented an apparatus for the manufacturing and burning of oxygen gas to be used in an incandescent light for examining the ear and larynx with Garcia's instrument.

By the profession in general, the new instrument at first was looked upon with some scorn as a physiological plaything, and the dispute as to the priority of its use may perhaps have had some beneficial effect in attracting an attention which its merits could not have effected. Türck and Czermak carried their ideas and their warfare into France. Having both published separate brochures in German on the use of the laryngoscope, Czermak in 1859, and Türck in 1860, they republished these immediately in French, and both went to Paris, where they gave public exhibitions and lessons in the new art. A commission of the Academy of Sciences of the Imperial Institute of France was appointed to investigate their rival claims. This did not choose to go into the question of priority, but accorded them both honorable mention (March 21, 1861) for the services they had rendered science in the introduction of the laryngoscope. The committee suggested that 1,200 francs for each be added to this honor.

While Czermak had remarked upon some pathological conditions, he attributed the first studies in this field to his pupil, Semeleider, who in 1858, published† an account of some pathological conditions of the epiglottis and of the tongue. Störk, Türck and Gerhardt, in the same year and the next began their numerous contributions to the literature of intra-laryngeal pathology. In this Türck was especially prolific.‡ All these earlier works of Türck

Türck and
Czermak in
France.

Clinical Use of
Laryngoscopy.

* See among others Störk, "Zeitsch. der K. K. Gesell. der Ärzte zu Wien," No. 46, p. 721, 1859.

† "Virchow's Archiv," No. 17, 1859, p. 193.

‡ "Zeitsch. der K. Gesell. der Ärzte zu Wien," No. 28, July, 1858.

§ His contributions and those of others are to be found chiefly in the "Zeitsch. der K. K. Gesell. der Ärzte zu Wien," and the "Allgemeine Medizin Zeitung" during 1859 and 1860. His brochure, "Praktische Anleitung zur Laryngoscopie," 1860, is largely a reprint of these papers together with a historical and polemical dissertation on the subject of Laryngoscopy.

were in some form soon translated into French and English. Whatever may have been his merit as to the inception of the idea of laryngoscopy, he was foremost in the spread of the knowledge of disease revealed by it.

For the most part his idea of pathology, especially pertaining to tuberculosis, conformed to the principles of Rokitanski. He described the appearances in lupus, diphtheria, syphilis, tumors and oedema of the larynx. Störk, in 1859, in an article on the technique of laryngoscopy spoke of making laryngeal applications of nitrate of silver with the aid of the laryngoscope. Thus early was the question which agitated Horace Green and his adversaries conclusively settled without controversy. Czermak also claimed to have made applications of caustics and other drugs to the larynx under the guidance of the laryngoscope as early as 1859.

Intra-laryngeal Applications.

The Spread of Laryngoscopy.

The use of the laryngoscope quickly spread in the large cities of other lands. In London P. C. Price, apparently unacquainted with Garcia's communication to the Royal Society four years previously published* an account of a steel mirror which was to be used in examining the back part of the tongue and the epiglottis. In the *Medical Times and Gazette*, August 4, 1860, there is a short editorial note mentioning the investigations of Türk and Czermak, and stating inaccurately that the mirrors used were similar to those invented ten years before by Mr. Avery.

Morrell McKenzie had visited Czermak in 1859, and was in Vienna during the controversy between Czermak and Türk. On his return to London in 1860, in company with Gibbs, Prosser, James and others, he was foremost in the use of the laryngoscope and the study of the phenomena which it revealed, and in 1863 he obtained the Jackson prize of the Royal College of Surgeons for his essay on "The Pathology and Treatment of Laryngeal Disease," his brochure on "The Use of the Laryngoscope in Diseases of the Throat with an Appendix on Rhinoscopy" appearing in 1865.

Windsor † gave an account of the history of the laryngoscope and pointed out the promise of its future. C. Racuhfuss ‡ introduced into Russia the knowledge of laryngoscopy and intra-laryngeal operations.

Czermak and Türk, as we have seen, published their first books in France in 1859 and 1860. In 1861 Moura had advanced far enough in the new art to publish a treatise on laryngoscopy, a second edition appearing in 1865. Czermak besides his stay in Paris

* "The Lancet," December 24, 1859.

† "British and Foreign Medico Chirurgical Review," 1863, Jan., p. 209.

‡ "Zur Laryngoskopischen Technik, St. Petersburg Med. Zeitsch," No. 1, p. 22, 1861.

also visited London, as did Türk. The former also visited many cities in Germany, and Tobold, in Berlin, in 1863 published his "Anleitung zur Laryngoskopie," in which he adopted the principle of fixing the reflecting mirror to a stand which was eventually modified into the present so-called Tobold's apparatus. The original idea of this, however, is to be found in Türk's papers.

Votolini* contributed much, by the originality of his diction and the fertility of his inventive powers, to the spread and advance of the art in Germany especially as to naso-pharyngoscopy and the employment of the galvano-cautery. Post Rhinoscopy was at first eagerly pursued by Votolini and Semeleder as an aid to the passage of the Eustachian catheter.

We have recited the attempt of Ephraim Cutter in America to utilize prisms in laryngoscopy. He and his predecessor in England, Warden, were alike unsuccessful in turning to account the principles of refraction, but his letters published by Elsberg are significant of how well extended was the idea of the practicability of laryngoscopy at the time Garcia demonstrated it.

Strangenwald¹, Church², Krackowitzer³ and John H Douglas⁴ and Horace Green in 1861 reported the new art in America.

Louis Elsberg, to whose exhaustive work† I am indebted for much of my information as to early laryngological literature in America, in 1862‡ and 1863§, published papers on the laryngoscope and laryngoscopic technique. The latter more than anyone else was active in drawing attention in America to the value of the new art, and for some time previous to these publications he had taught the technique in the University Medical College in New York City. His attention had been attracted and his ardor stimulated by Czermak, who had sent him his book. These studies and observations he brought, in 1863, before the New York Academy of Medicine and the American Medical Association. He also thus early urged the value of topical applications to the larynx. Horace Green lived to see an instrument of precision prove, before the Academy of Medicine, the claims which he had advanced there so courageously and so tenaciously many years before, but he himself took no active part in developing in his native country the art of laryngoscopy. He died in 1866.

* "Die Laryngoskopie und Pharyngoskopie," 1861.

1 "American Med., Monthly and New York Review," Vol. XIV, July, 1860, p. 15.

2 "Bulletin of the Academy of Medicine," Vol. I, 156.

3 Ibid., p. 162.

4 Ibid.

† "Trans. Am. Lar. Ass'n," Vol. I, 1879.

‡ "Am. Medical Monthly," 1862, Vol. XVIII, p. 386.

§ "Am. Medical Times," May 9, 1863, Dec. 26, 1863.

It was several years after Elsberg became active in the propagation of laryngology in America that others joined him.

In 1866 J. Solis Cohen, of Philadelphia, began* that long series of communications which have done so much to establish the specialty of laryngology in America and to stimulate its steady advance for nearly forty years.

Laryngological Clinics and Instruction.

In the Medical Schools and Universities instruction was soon given in the art of laryngoscopy. Türck and Semeleider are recorded as giving instruction in Vienna in 1861, the former being created professor in 1864. In other large cities, as well† as in Vienna, private and public instruction was soon to be easily obtained by the student. In 1861 Elsberg had begun teaching laryngoscopy in New York, and in 1868 in the catalogue of the "Medical Department of New York" his name appears as Professor of Diseases of the Throat, but not until 1875 was laryngology included in the curriculum of the Harvard Medical School, and that of the New York College of Physicians and Surgeons. After this it soon became a department of nearly all the teaching medical institutions. In the dispensaries and hospitals of New York City, special clinics were formed about the same time. The throat department of the New York Eye and Ear Infirmary was separated from the Aural Department in 1873. In 1875 a department for Diseases of the Throat was opened at the New York Dispensary.

Laryngological Literature.

The new specialty of laryngology found place for its publications at first exclusively in the general medical literature of the day, but especially in the otological journals. "The Archiv. fur Ohrenheilkunde," founded in 1864 in Vienna, and especially in the "Monatsschrift fur Ohrenheilkunde," founded by Voltolini in 1866, in Berlin. The "Annales des Maladies de l'oreille, du larynx, etc.,," began its issue in 1874 in France. "The American Archives of Laryngology" began its short-lived career in 1880. "The Italian Archivii" in 1881, the Spanish "Revista de Laryngologia, etc.,," in 1887, while the English "Journal of Laryngology" did not issue its first number until 1887. In 1884 Semon began his comprehensive index of laryngological literature, the "Centralblatt fur Laryngologie," while it was not until 1893 Fränkel began his stately Archiv, which has done so much in the last few years to supply us with the best thought of the workers in our own special field.

* Vid. "New York Med. Record," 1866. "Am. Jour. Med. Sciences," April-Oct. 1867.

† I regret very much that more exact and accurate information is not at my disposal of the beginnings of laryngological instruction in various capitals of the civilized world.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, March 26, 1902.

Emil Mayer, M. D., Chairman.

A Shoe Plate in the Rhino-Pharynx.

Dr. Charles Mack presented a shoemaker who had come to him about 2. p. m. with a history of having swallowed a shoe-plate at 9 a. m. of the same day. The plate was found to be in the rhinopharynx on the same side. The foreign body measured $1\frac{1}{2}$ inches by $\frac{1}{2}$ inch, and had three spike-like projections, measuring nearly half an inch in length. The plate was almost completely covered with mucous membrane. After thorough cocainization a canulated laryngeal forceps was used to grasp the object, but even with the exercise of considerable force the plate could not be removed until with the finger the mucous membrane had been stripped from off the spike-like projections.

A New Instrument.

Dr. J. Abraham exhibited a new instrument intended for removing posterior hypertrophies of the inferior turbinate. The instrument appeared to be simple and practical. He had just received it from Dr. Lake, of London, and had had no personal experience with it as yet.

Tumor of the Larynx Presented for Diagnosis.

Dr. T. R. Chambers presented a healthy girl of twenty-two, who, five months ago, had come from Finland. She had had a slight hacking cough for several months prior to coming under observation, and was well nourished, though there was slight impairment of the voice. Examination showed a lobulated tumor on the epiglottis wholly obstructing the view. After the use of a spray of adrenalin the tumor shrunk sufficiently to allow of a view of the arytenoids. This was one month ago, and since then the patient had been on specific medication. As there had been very slight

contraction he would favor a continuance of the specific treatment for three or four weeks more, though he did not think the growth was syphilitic. The case was presented for diagnosis.

A Case of Oidium Albicans in the Adult.

Dr. Gage presented a patient who gave a history of alcoholic gastritis and of a white exudation persisting in the mouth and throat, and spreading down to the epiglottis. The case was presented for diagnosis, as the infiltration seemed to be too extensive for thrush. The application of iodine and alcohol had cleared up the condition somewhat.

A Case of Frontal Sinus Disease.

Dr. W. N. Hubbard presented a case of frontal sinus disease occurring in a woman. Irrigation had relieved her of headache and most of the discharge for a time, but the trouble having recurred, the patient was etherized and operated upon. With Dr. Coffin's trephine pus was detected on the right side, and the sinus was thoroughly curetted. The probe detected bare bone around the ethmoid, but an exploratory opening on the other side was negative, and it was accordingly closed by suture. On the right side there was no pus for seven or eight days, so that he almost regretted not having closed it up immediately. After this interval suppuration began and the packing and dressings were renewed daily. The opening was allowed to close at the end of six weeks, and the patient was entirely free from symptoms. The case was presented to show the effect of simple eyebrow incision without drainage into the nose. This procedure seemed to him a rational one, because the object was to secure a filling up of the cavity with granulations.

A Case of Naevus of the Tonsil.

Dr. D. Bryson Delavan reported this case. The patient was an old man of seventy, at present an inmate of St. Luke's Hospital. A large, purplish mass occupied what would be the right side of the pharynx. It was composed of large veins. There was no semblance of ordinary tonsillar tissue left. The man stated that he had had this condition, so far as he knew, all his life, and the only trouble experienced was that occasionally the veins would become distended with blood, and if he lay on the left side, respiration would become obstructed. The man also had a small nevus on the right side of the upper lip. The speaker said he believed this condition to be exceedingly rare.

Dr. J. E. Newcomb said regarding Dr. Chambers' case, that he agreed with Dr. Chambers, that the case was apparently neither syphilitic nor tubercular. If syphilitic, one would expect more ulceration on the surface. When touched with a probe it seemed to be almost fibrous. He had been reminded by this case of a similar growth reported by Dr. Farlow to the American Laryngological Association, which proved to be a lipoma.

Dr. Beaman Douglass suggested the possibility of this being a congenital condition. It certainly did not seem to be malignant, syphilitic or tubercular, and if benign it must belong to the myomatous or fibrous group. A microscopical examination alone could establish a proper diagnosis.

Dr. M. D. Lederman said that the growth, when examined macroscopically, looked like a fibroma, and he understood from Dr. Chambers that there had been recently some proliferation of tissue. The mucous membrane over the arytenoid region appeared to be hypertrophied, but no ulcerative areas were visible.

Dr. Emil Mayer said that the only proper way of settling the diagnosis was by taking a section and examining it. It might be a lipoma, a pure chondritis or possibly lupus. Lupus of the larynx certainly appeared quite as benign as this.

Dr. Lewis A. Coffin remarked that the trephine used in Dr. Hubbard's case was an instrument measuring about one centimeter in diameter. He had devised it for the purpose of cutting out any portion of a circle and making a bone flap.

Dr. C. G. Coakley did not think it was necessary to pack the wound as often as had been done in Dr. Hubbard's case; it often could be left for three or four days, and by allowing the granulations to remain undisturbed for this length of time their growth would be better. Of course, if there were pain or elevation of temperature the packing should be removed sooner.

Dr. Thomas J. Harris said that almost a dozen operations had been devised for the treatment of frontal sinus disease, and yet perfection had not been reached. One class of cases would heal very readily, while another class, in which there were large recesses and the diseased mucous membrane could not all be removed, proved most intractable under all methods of treatment. He had worked most faithfully on one case for over a year, and although the frontal headache had gone, the discharge still persisted despite the fact that there was perfect drainage through the nose. Possi-

bly it might have sealed up more quickly if a barrier to infection through the nose had been maintained. If the nose were fairly normal, and there was little or no involvement of the ethmoidal cells, he would, in the future, avoid securing drainage through the nose, and would treat the case on the plan pursued in the one under consideration.

Dr. Francis J. Quinlan said that a few years ago he had shown that the nose was a source of renewed infection. If every portion of necrotic tissue were removed and the cavity were gently but firmly packed against rubber tissue, the results would be much better. He had treated quite a large number of these cases, and did not hesitate to make a large opening into the frontal sinus in order to remove all diseased tissue. There was usually very little depression and deformity, and if there should be it could be obliterated by the subcutaneous injection of paraffin.

Dr. T. R. Chambers said regarding Dr. Delavan's case, that about three years ago he had presented to this section a case like the one just described by Dr. Delavan. The patient was a boy of sixteen years, and the left tonsil was the one affected.

Ichthargan and Its Use in Nose and Throat Affections.

Dr. Beaman Douglas read this paper. He said that this combination of ichthyl and silver had been sent to him from Hamburg for testing. It is a brown, amorphous powder, odorless and stable. The aqueous solution becomes gradually darker when exposed to light, but undergoes no change if kept in dark yellow bottles. This compound contains 30 per cent of silver and 15 per cent of sulphur. It was, therefore, the strongest of the silver compounds. Experiments had proved conclusively that it had a much greater penetrating power than silver nitrate, and that the other silver salts were much more toxic. When administered by the mouth or subcutaneously it is said not to cause any dangerous effects. In nose and throat work it should be used ordinarily in the strength of one in twenty, dissolved in water or glycerine. When applied as a powder it causes burning and sneezing. Watery solutions of a strength of 0.1 to 0.3 per cent, seemed to have no other effect than to increase the secretion from the nose. In 10 per cent solution it causes a disagreeable taste and nasal irritation. There was found to be no excessive reaction from the use of a 4 per cent solution. When applied to a congested area there was some anemia produced and apparently a very slight anesthesia.

The latter was of no practical value, and probably resulted from the anemia. The antiseptic action of the drug was seen in cases of atrophic rhinitis. As an antiphlogistic its effect in the nose was quite marked. When ichthargan was used for some time a tolerance was established, and this was followed by improvement in the nasal circulation. The drug acted as a stimulant and alterative. Compared with silver nitrate it was about one-tenth as irritating, but even in concentrated form it never cauterizes. It should be found useful in cases of acute catarrhal rhinitis, and in some cases of hypertrophic rhinitis. In acute rhinitis it was useful when applied either as an ointment or solution. In acute catarrhal laryngitis in the adult it would be found beneficial when used in from 4 to 8 per cent solution sprayed upon the parts. The best results were obtained in atrophic rhinitis.

A Histological Study of the Proliferation and Phagocytosis of the Faucial Tonsils.

Dr. J. L. Goodale, of Boston, Mass., was the author of this paper.

He said that there were two kinds of phagocytic cells found in the tonsillar ring, namely, first, polynuclear neutrophilic cells, and second, large mononuclear cells, resembling morphologically epithelial cells. The former are found chiefly in the crypts and in the blood vessels, the latter in the reticulum of the follicles. The framework of each follicle is composed of a ring or capsule, composed of four or six layers of connective tissue, separated by lymphoid cells. In the normal human tonsil one or more of the epithelioid phagocytes were found in each follicle. The phagocytes incorporated and digested lymphoid cells and cellular detritus, but apparently did not attack polynuclear leucocytes or endothelial cells. In the mucous membranes of the crypts numerous plasma cells, lymphoid cells and polynuclear neutrophiles occur. Lymphoid tissue from other positions of the tonsillar ring was examined, and found to contain endothelial phagocytic cells, but these were less numerous than in the faucial tonsils.

Tonsils were examined from the opossum, cat, sheep, cow and pig. The essential features in all these animals were the same. In the pig, the fibrous tissue of the reticulum and capsule of the follicles was the most marked, while in the cow it was the least marked. In the tonsils of the cat, eosinophilic polynuclear cells near the case of the organ were extremely numerous. In simple hyperplasia, the most conspicuous alteration was a great increase

in the number of endothelial cells. The lymphoid ring was proportionately not increased. The endothelial phagocytes were most numerous near the centre of the recticulum of each follicle. The lining endothelium of the capillaries and blood vessels showed no unusual proliferation, a feature which serves to distinguish the condition from acute inflammation. In atrophied tonsils, the follicles were markedly diminished in number, those situated near the crypts were the largest, and showed a greater proliferation of the endothelium than those at a distance. In acute infectious tonsillitis, the centre of the follicle appeared enlarged from increased proliferation of the endothelial cells and of the lymphoid cells. A proliferation of the endothelial cells, of the capillaries and of the smaller blood vessels, was quite generally noted. In sections of the tonsils in which chromic acid had been deposited in the crypts, there was an area of necrosis of the tissue in the immediate vicinity. Beneath this there was a markedly increased proliferation of the endothelial cells of the reticulum with a formation of mononuclear endothelial phagocytes.

Dr. Beaman Douglass said that a paper of this kind, representing as it did much laborious scientific research, did not admit of discussion by the Section, but he wished to compliment the author on the results obtained, and upon the beauty of the photomicrographs presented. He noted that the bacteria had not been found very much within the tonsillar tissue. The bacteria were found on the surface of the tonsil, and near the crypts. This suggested that the hyperplastic inflammation of the tonsil was the result not so much of bacterial infection and irritation as of an irritation due to other causes. Whether these causes were climatic, thermal or chemical it was impossible to state at the present time. The speaker said that a few years ago he had studied a number of tonsils and adenoids, and had found that bacteria were rarely found in the interstitial tissue. From this he had drawn the same conclusion as that presented by Dr. Goodale.

Dr. H. L. Swain, of New Haven, said that eighteen years ago he had spent a considerable time in the study of the histology of the lingual and other tonsils and had consequently very greatly enjoyed the paper by Dr. Goodale.

The present methods made the older seem very primitive. Especially beautifully had the photograph which was passed around shown the existence in the tonsil proper of the endothelial

phagocytes, whose evident duty was to cure of such infecting and deleterious matter as escaped the leucocytes. In studying tonsil tissue, microscopically, one is constantly confronted with the fact that in the chronically inflamed structures the epithelium is bored through in many directions by the emigrating leucocytes, and it is satisfactory to know that if these same wandering cells are not on guard all the time, cells do exist within the tonsil which are rapaciously active in destroying invading matter. The whole ring of lymphoid tissue in the upper air tract should be viewed as lymph nodes. Other lymph nodes are noted for the fact that they harbor tubercle bacilli and that would lead one to expect that there would frequently be such bacilli present in tonsillar tissues. Dr. Wright, of this Section, and others have examined very large numbers of specimens and very rarely indeed, are such bacilli found in them. Evidently the activity of these same cells which the writer of the paper so clearly demonstrated, must be responsible for the absence of these invading organisms. Ought we not to consider this fact and avoid interfering with these normal structures unless thoroughly convinced of the necessity of surgical measures?

Personally, he felt that the pharynx tonsil was the more dangerous as regards infection of the general system on account of its broad, flat, not sharply-defined contour, than were the faucial tonsils, which had well-defined capsules and was thoroughly isolated in between the pillars of the palate.

Dr. Goodale said that in the infectious diseases one sees an enlargement of the tonsil, and it was reasonable to assume that this was due to the toxin of the disease circulating in the system and causing a proliferation of the cells of the tonsil, just as occurs in local disease of the tonsil. In typhoid fever an enlargement of the tonsil takes place very much as occurs in Peyer's patches in the intestine. Dr. Swain spoke of the absence of a fibrous barrier in the pharynx tonsil; he would call attention to the fact that there was a limiting membrane of yellow elastic tissue in the pharynx tonsil which acts as a barrier.

A Clinical Contribution to the Study of Empyema of the Frontal Sinus.

Dr. Max Toeplitz reported this case. The history dated back four years, but the acute symptoms did not appear until last November, at which time the patient came under the author's observation. The diagnosis of empyema of the frontal sinus on the right

side was made, and an opening was established for the escape of pus by removing the middle turpinal and curetting the sinus through the nose. This promptly relieved the frontal headache, but was followed in a few hours by great swelling of the lids and exophthalmus. Dr. Thomas R. Pooley made a diagnosis of phlegmon of the orbit, and an operation from without was immediately undertaken. Numerous polypi and a large quantity of pus were evacuated; a soft rubber drainage tube was passed into the nose and the cavity was packed with gauze, and the orbital cavity searched for pus without avail. The swelling of the lower lid was, for several days after the operation, still great, but pus could not be detected at once, despite another opening of the orbital cavity from below. The abscess opened spontaneously after four days. From the exploration of the orbit made at the time of the second operation, it seemed certain that no accidental opening into the orbit had been made when doing the first curettage, and it was probable that the orbital abscess resulted from the development of a thrombo-phlebitis affecting the veins which pass through the bone into the orbital cavity. The patient made a complete recovery.

Dr. Thomas R. Pooley said that cases of frontal sinus disease in his experience were always associated with empyema of the anterior cells of the ethmoid, and in all cases that he had observed the swelling had been limited to the upper and inner corner of the eye. If the swelling passed beyond the middle of the brow he was almost certain that the outer wall of the sinus was involved. One of the two exceptions that he had seen was the case just reported. In the other exceptional case there was swelling of both upper and lower lids, and the operation was done in the manner described by Dr. Toeplitz, with the result that a large quantity of pus was evacuated from the depths of the orbit. Because of this experience he had made the diagnosis of probable abscess of the orbit. The subsequent formation of an abscess on the lower lid seemed to him entirely unique. His belief was that an external operation was always indicated whenever there was swelling in the upper and inner corner of the eye; he would even go so far as to say that if there was continued pain on pressure with frontal headaches the operation should be done. The operation which commended itself to all oculists was an incision into the floor of the sinus, and not into the anterior wall. The latter gave rise to great deformity in many instances.

**CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL
SOCIETY.**

Meeting held January 21, 1902.

Reported by Wm. L. Ballenger, M. D.

Dr. Wm. E. Casselberry, President, in the Chair.

Dr. Otto T. Freer read a paper entitled "The Correction of Deflections of the Nasal Septum with a Minimum of Traumatism."

In contrast with the Asch operation, the essayist described a method of operating under local anesthesia which he has employed with favorable results in fifteen cases. To produce anesthesia he uses powdered cocaine which is applied to both sides of the septum, at the point to be operated, with a delicate, cotton-wrapped applicator, which is moistened before being dipped into the powdered cocaine. In this way anesthesia of limited area is produced. An advantage of cocaine in the dry state is that it contains none of the poisonous products of decomposition liable to occur in solutions. No untoward effects have been observed as the total amount of the drug used is small. After the cocaine adrenalin, 1-1,000, was employed, whereby the operations were practically bloodless as well as painless.

Two typical forms of septal deflection are met with, viz., angular and bowed, the former of which is chiefly limited to the cartilage. The mucous membrane is separated from the cartilage so as to expose the deflected or redundant portion thereof, which is, as far as possible resected, the first step being to dissect out and remove the triangular portion which constitutes the anterior end of the deflection, whereby the mucous membrane of the concave side is exposed. After this, the remainder of the deflected cartilage is similarly removed with suitable shaped knives and when the deflection extends in the bony portion of the septum, it is next weakened with a long dental chisel or electric trephine, after which it is fractured and straightened with a Roe septum forceps. The hemorrhage is slight and all blood is removed, as fast as it appears,

with cotton swabs, so as to keep the field clear so the several steps as taken can be clearly seen.

When the operation is completed so the patient can breathe freely through either nostril, the operated naris is lightly packed with long strips of gauze impregnated with powdered subnitrate of bismuth. The tampon is removed on the fourth or fifth day and is not reintroduced. The wound heals kindly and while small perforations occasionally follow they cause no annoyance. The time required for preparation and to complete the operation described, varies from one-half hour to one hour, or even longer. Such extensive removal of the cartilage may be thought to endanger external deformity, though such is not the case, and the only external effect ever observed is a straightening of a previously bent nose. The breathing through the nostril is more free immediately after the operation than for some weeks thereafter, as congestion and swelling as well as a certain amount of provisional callous growing on wounded bone and cartilage needs time to be absorbed. After two months or so, the nostril becomes as open as right after the operation.

Dr. Moreau R. Brown called attention to the popular impression that the septum is the support of the nose and that if it is removed, the nose is apt to fall in, therefore one should hesitate in removing it, owing to the liability of legal action should the nose at a later date become deformed through disease or accident. While the operation described would surely be followed with excellent results in certain cases, equally good results can in most cases be secured by first removing all thickenings and growths, and then operating the remaining simple deflection in the usual manner. If a Roe forceps be employed it will prove more serviceable if a small male blade is combined with a large female blade. Dr. A.M.Corwin reported pleasing results from the use of the Roe forceps, as described by Dr. Brown, which gives more room for the septum to pass between the blades when they are closed, so the fracture is more complete.

Dr. E. F. Ingals:—Different cases of deflected septa call for different operations, hence the method of preference in each particular case should always be selected. For several years I have employed a 4-per-cent solution of cocaine which very rarely causes constitutional symptoms. The solution is guarded by atropin 1-10

grain, strophanthin 1-5 grain, ol. caryopilli 3 minims and carbolic acid 10 grains to the ounce. The carbolic acid appears to prevent absorption into the blood current to the extent that would occur if it were not used.

Dr. C. M. Robertson:—In nearly all cases of deflection there is redundancy of tissue at the apex of the convexity which should be removed. By injecting a saline solution under the mucous membrane in the concavity, as suggested by Shurly, it can be thus separated and lifted up so as to obviate a perforation being made when the convex prominence is removed. I am chary in my use of cocaine and with a patient who has shown susceptibility to the drug, it is my custom to administer full doses of strychnia for several days prior to an operation coupled with the use of stimulants at the time thereof.

Dr. H. Gradle called attention to the use of a guarded trephine in operations on a deflected septum. Outside of two cases of acute mania I have never been seriously alarmed with the use of cocaine. During the past six years I have used only pledges of cotton wound tightly around wooden tooth-picks so the amount of cocaine absorbed is not large. In this manner I have used 20-percent solutions in hundreds of operations and have never seen any unpleasant results therefrom.

Dr. W. L. Ballenger called attention to the spoke-shave as a means of removing ridges from the septum. He said it should be used with extreme caution, as in cutting through dense bony tissue, such as is found in the posterior portion of the ridge, it is impossible to control the direction of the cut. Perforations of the septum are liable to occur on this account. In order to avoid this accident, he first saws a groove on the under and then on the upper surface of the ridge. This guides the spoke-shave and results in a very smooth and satisfactory operation.

Dr. Freer, in closing the discussion, said that it is the amount of cocaine absorbed by the patient that endangers him and not the concentration of the solution employed. With powdered cocaine an intense local effect is produced, while but little cocaine is absorbed. The swab used is moistened before it is dipped into the cocaine powder so it is really applied in the form of a thick syrup, which adheres to the part touched with it, while a solution of cocaine diffuses itself over a larger surface with greater danger of absorption.

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-first Ordinary Meeting, February 7, 1902.

E. CRESSWELL BABER, M. B., President, in the Chair.

The following report of the Morbid Growths Committee was read:

1. On Dr. Milligan's case of fibro-sarcoma of the right vocal cord. Shown on January 10, 1902.

"After examination of the specimen submitted, the Committee report that they can find no sufficient evidence upon which to base a diagnosis of fibro-sarcoma or malignant disease. The bulk of the growth consists of fibrous tissue. The Committee suggest that the structures observed are the outcome of a slow inflammatory process."

2. On Dr. Milligan's case of pharyngeal lipoma. Shown on January 10, 1902.

"The microscopic examination confirms the diagnosis."

The following cases and specimens were shown:

Case of Tuberculosis of the Larynx with Marked Swelling of the Thyroid Cartilage in a Man aged 37.

Shown by Mr. Richard Lake. The patient had been sent into the Mount Vernon Hospital at the end of 1898, where he remained for three months, during which period at least forty pieces were removed from his larynx. The lung was only slightly affected, and, as far as physical examination went, this was entirely cured when the patient left the hospital. His larynx also was cured, and remained so for about eighteen months. During the latter half of 1901 he complained of occasional swelling of his thyroid cartilage; this, however, went down with a small amount of treatment, the interior of his larynx never showing any signs of recurrence.

He was not seen again until about three weeks ago. The condition was then much what was seen now: The thyroid cartilage was enormously thickened, was rather hard, and inclined to be uneven on its surface. Internally there was a pointed or conical projection forwards of the right ventricular band. He appeared to be more anemic and thinner than he had been three months prev-

iously. His voice was much worse than it was; in fact, he could only make himself intelligible with great effort, which effort was accompanied by pain.

The case was brought before the Society for an expression of opinion as to the nature of, and best form of treatment for, the disease of the thyroid cartilage.

Dr. Dundas Grant thought the condition looked like tuberculous perichondritis of the thyroid cartilage, but the progress was certainly rather slow. He had seen this in a case of laryngeal phthisis, eventually resulting in an abscess, but, if he recollects the case aright, its course was much less indolent than that of Mr. Lake's case. As regards treatment, he suggested that the right course would be to open it, and having explored, to drain and inject the iodoform. It would be unfortunate if the whole thyroid cartilage were to come away as a sequestrum, since the obstruction following that would be very severe.

Mr. R. Lake said he last saw this patient only a fortnight ago, and until then he had not seen the man for some time. The swelling was not then so extensive, but much harder. Four months ago when he saw him there was some temporary perichondrial trouble. He showed the case because he wanted suggestions as to what was to be done.

Case of Rhinorrhea of Some Years' Duration in a Woman aged 38.

Shown by L. A. Lawrence. The patient had had discharge of a clear fluid from the nose for many years. This followed an attack of general edema at the age of 20, probably of acute renal origin.

The rhinorrhea, from being occasional and fairly profuse, is now clearly constant, except when the patient has cold, during which time it stops almost entirely.

In 1895 she was seen several times by Dr. Edward Law, when the nose was fairly clear and dry at the back. Her sense of taste and of smell in those days was perfect.

Now she had largely lost these senses. Her nose on the right side showed deflection of the septum to the right, and some enlargement of the inferior turbinate bone, and a polypoid condition of the mucous membrane covering the middle turbinal.

On the left side the same sort of condition existed, but the turbinal swelling was more marked. The rhinorrhea was more marked

on the right side, and was excited by any kind of stimulus—draught, shutting a door suddenly, etc. Patient had a very large appetite, and slept abnormally well during an attack. She had had some vaso-motor disturbances about her fingers, and analgesia of thighs and hips and upper arms, which was more or less transient.

Local treatment for the nose had been tried—chromic acid and alkaline douches, and the cautery—without avail. Internal remedies—iron, arsenic, and strychnine—seemed to have done more good; supra-renal extract had also been tried, but none of them had given any certain relief.

The President suggested in reference to the question of treatment that a trial might be given to the method he had employed in a case he had shown to the Society three or four years ago, where the rhinorrhea was arrested by the application of the continuous current externally to the nose. He looked upon the condition as a vaso-motor neurosis.

Dr. Herbert Tilley thought the symptoms were the outcome of some obscure local vaso-motor neurosis, but that failure to give relief in this case should not be assumed until certain obvious pathological defects within the nose had been relieved. In the left middle meatus was a polypus the size of a horse-bean, and similar chronic inflammatory changes could be seen in the right nasal cavity, although the exact definition of such changes was obscured by a very prominent deflection of the septum towards the right side. It was highly probable that the removal of such obvious pathological changes would give at any rate partial relief to the symptoms.

Dr. H. Lambert Lack agreed with the last speaker as to the condition of the middle turbinates, and considered the case just one of those in which local disease in a neurotic subject was responsible for the rhinorrhea. The same local conditions in another patient might not cause such symptoms. He thought that both middle turbinates should be partially removed.

Mr. F. H. Westmacott said that the part which at first sight looked like a polypus, having a glazed translucent appearance, was, he thought, really due to some of the discharge having dried upon it. On looking carefully one might see a condition of lobulated hypertrophy of the middle turbinate bone. He had had a good many of these cases, and had been struck with the advantage accrue-

ing from removal of one or more of these protrusions of the mucous membrane and applying pure carbolic acid every day for about a fortnight. As carbolic acid was an anesthetic, the application was painless, except for a little momentary smarting. Patients stated that the anesthetic effect of the acid remained for quite twelve hours, and in some cases for twenty-four hours. He found this treatment effected a considerable diminution in the rhinorrhea, and if, as in this case, the inferior turbinals were not so much affected, a good deal of improvement took place. As regards the mode of application, this was done by means of cotton wool wound round the end of a wire probe; the wool was dipped into the acid and then applied the whole way round the edge of the middle turbinate bone.

Dr. Pegler said that no mention had been made of the deflection of the septum to the right side, which was a source of trouble in continually keeping up contact with the outer wall. The polypi of the middle turbinate might be attributed to the general sodden state of the mucous membrane. Glacial acetic acid would be a good application to try in this case, but the result was not reliable.

Dr. Dundas Grant said that the correction of the septal deviation either by straightening or by removing a projecting part would be very advisable for the purpose of manipulation of the deeper parts of the nose. He did not think it likely that the septal deflection was directly one of the elements in the production of the trouble. The attacks of so-called cold seemed to be almost daily, and answered very much to the description of hyperesthetic rhinitis. He asked whether adrenalin had been tried.

Dr. Fitzgerald Powell was of opinion that this case represented what was understood as hypertrophic rhinitis. The middle turbinate was enlarged, and the inferior turbinal slightly so, and there was a distinct spur on the septum. He thought that the only chance of getting much relief would be to remove in some way portions of the middle turbinate, either by shaving them off or by the use of the cautery. Local application of washes, etc., in his opinion, would have no effect until the abnormal portions referred to were removed.

Mr. L. A. Lawrence said that adrenalin had been tried, but without benefit. He was much obliged for all the suggestions that had been made, but they were all offered with the idea of relieving the

nasal obstruction. With regard to that, he supposed that most of them would agree that the nasal obstruction should be removed, but was the nasal obstruction the cause of the rhinorrhea? That was the important point. Many people had a deflected septum, or an enlarged turbinate, or polypoid masses, but they did not suffer from rhinorrhea as a consequence. The patient was of an extremely neurotic tendency. He was afraid if he followed all the advice given there would not be much left of the interior of the nose. He wanted to hear if there was any experience of this nature having been treated otherwise than by removal of obstructions and portions of the turbinates, etc., and would welcome any suggestions of that sort.

Case of Lupus Nasi.

Shown by Mr. F. G. Harvey. The patient, a man aet. 24, had suffered from an obstruction to breathing in the right side of the nose ten years ago. A swollen condition of the right inferior turbinal was noticed at that time, and the disease had since successively implicated the skin of the tip of the nose, the posterior choana and pharyngeal roof on the right side, and the epiglottis. The region of the inferior turbinal and the skin of the nose had been cured by the use of the curette, but the disease remained active in the roof of the naso-pharynx.

Mr. Parker said that this case had been under his care for many years. He first saw the patient in 1894, when he came to the hospital suffering from nasal obstruction of three years' duration. There was apparently, then, an ordinary hypertrophic outgrowth from the inferior turbinal. This was removed. Instead of healing the wound became ulcerated, and assumed the characteristics of a tuberculous ulcer. The chest was then examined, and well-marked signs of phthisis discovered. It was an interesting point as to whether the outgrowth originally removed was a tuberculoma or whether it was hypertrophic, and whether, if the latter, the resulting wound had been infected from the lungs. The ulceration had extended and affected the pharynx, and in May, 1895,* the case was shown here as one of "tubercular ulceration of the nose and pharynx." After this date the patient developed typical lupus in the skin of the nose, and a little later the epiglottis became affected. Meanwhile the condition of the lungs improved, and then became

*See "Proceedings," Vol. II, p. 88.

quiescent. Whilst under his care Mr. Parker had tried both local and general treatment, but the only thing which did him any real good was a very severe attack of erysipelas, after which he was very much better for a long time. The speaker had last seen the case about three years ago, and he thought the present condition was very much as it was then.

Case of Partial Membranous Occlusion of the Right Posterior Choana.

Shown by Dr. Lambert Lack. The boy, aet. 18, had thin crescentic bands passing from the roof of the naso-pharynx down towards the base of the nasal septum attached along the outer side of the space, almost completely hiding the choana on the right side, and less prominent on the left side. There was a small perforation of the septum, and the boy said he had had a discharge of thick matter from the nose some years ago, but no reliable history could be obtained.

The President had made a careful examination, but did not think the partial occlusion was on the choana itself, but behind it. It was a band extending up from the Eustachian cushion, and looked like a cicatrix, but he was unable to obtain any history of an operation. There was also perforation of the septum.

Dr. Scanes Spicer agreed with the President as to the membrane being posterior to the choana and in the naso-pharynx; the band extended upwards from the right Eustachian cushion to the adenoid tissue at the apex of the right choana, and it had the appearance of a cicatricial band, as frequently seen here.

Dr. Dundas Grant thought the case presented a great many points of interest, and it would be valuable if Dr. Lack would describe the history more thoroughly. The patient said that at one time a mass of some sort came away from the back of the throat. It was crumbly in consistence. After that he was able to breathe through the nostrils, although previously he was unable to do so owing to the great obstruction. He thought that these partial web-formations were cicatricial, but felt some difficulty in surmising as to what it was which had come away. It might be simply some inspissated cholesteatomatous matter, which was sometimes seen in the nose, or it might be a soft rhinolith or a sequestrum. From the deformity of the part he thought it quite possible that a small sequestrum had come away.

Mr. Spencer thought the diagnosis turned on the question of the septal perforation. The cicatrix seemed rather far back to have been the seat of operative interference. The perforation was probably due to inherited syphilis. Perhaps a sequestrum had come away, which would explain the history given. There also had to be taken into account the facial aspect and the eye symptoms.

Dr. St. Clair Thomson thought he could throw light on the perforation of the septum. He inquired of the man if he had had an operation performed. He had. The patient had performed it himself! He had in his pocket a horse-nail, which he had once pushed up his nose. Dr. Thomson felt so sure on examining the cicatrix that it was traumatic in origin that, when there was no history of any operation by a surgeon, he cross-questioned the man with the result stated. When he once had some nasal obstruction the man pushed the nail up to relieve the obstruction; he then felt something give way; this was followed by profuse hemorrhage. From the appearance and the situation of the perforation, which was not in the bony septum, but at the back of the cartilaginous part, he thought the patient's own explanation was a very probable one. He would like to hear from Dr. Lack, if he had put his finger into the choana, because he (Dr. Thomson) could not say from inspection of the case that it agreed with the description of "membranous occlusion." It was situated entirely on a posterior plane, and there was a somewhat similar condition on the other side. The occlusion really extended from the cushion of the Eustachian tube up to the roof of the pharynx. Such an occlusion was not uncommonly left by adenoid remains.

Dr. FitzGerald Powell said it would be rather interesting to get a portion of the band away and have it examined under the microscope to make out the exact construction of the tissue. It might be, as suggested, cicatricial tissue, but it was difficult to explain exactly how it came to exist there. Whether it was a developmental growth and had always been there or whether it was a growth of adenoid tissue arising in the fossa of Rosenmüller which had become attached to the cushion of the Eustachian tube was doubtful. If there had been nasal obstruction, and this was cleared up by something coming away, it was probably a large crust.

Mr. Spencer doubted whether it was possible for the patient to have pushed such a nail through a healthy septum. To have done

so there must have been previous ulceration or softening. He probably pushed away a crust or sequestrum which was obstructing the nasal passage.

Mr. Westmacott thought a man could easily injure the septum with a nail of that size. It was well known how easily an ulceration in the septum following traumatism did spread through to the other side and leave a typical perforation such as they had now before their notice.

Dr. H. Lambert Lack, in reply, regretted that the history was incomplete and unreliable. He should say that the mass which was said to come from the post-nasal space was probably a sequestrum. He had put his finger into the space and had found a very definite band with a concentric margin, which was quite different to anything he had ever felt before in the adhesions which occurred in a man with adenoids. He did not think it was due to adenoid growth, but more likely to congenital syphilis.

Case of Edema of the Larynx for Diagnosis.

Shown by Dr. Lambert Lack. The patient, a man aet. 40, had been in the London Hospital for three months suffering from hoarseness and slight dyspnea. The voice had been affected now for nearly six months. There was no difficulty in swallowing and very little expectoration. There was some wasting, but the patient felt well and strong. There were no physical signs of phthisis, and no tubercle bacilli had been detected in the sputum.

On examining the larynx the right arytenoid region was seen to be an immense edematous swelling, smooth and not ulcerated. The edema extended slightly to the right side of the epiglottis. The left arytenoid appeared normal, but was partly hidden by the swelling on the right side. The interior of the larynx could not be seen.

Mr. W. G. Spencer thought the diagnosis of this case very interesting. It looked almost as if it were a malignant condition, but there were no glands in the neck, and in epithelioma in that particular region the glands in the neck were so early enlarged; in fact, very often the glandular enlargement preceded the discovery of primary epithelioma. The disease could not very well be tuberculous owing to the length of the history and the absence of glands in the neck. He was therefore of the opinion that it must be of syphilitic origin.

Dr. St. Clair Thomson had shown a very similar case to the Society about a year ago. It ran a very erratic course. Several members thought it might be malignant. He watched the patient and had to perform tracheotomy later on. Very soon afterwards the patient's health broke down, and he died of tuberculosis, bacilli having been found previously. Dr. Horne had possession of the larynx. The post-mortem examination was confirmed by sections.

Dr. H. Lambert Lack said he brought the case forward because he could not arrive at a diagnosis. The case had been thoroughly treated with iodide of potassium and mercury, and he had been kept in bed in hospital for three months. There were no tubercle bacilli, and further, if the case had been tubercular in nature, it would probably have got markedly worse under iodides. The man was wasting. He did not know if sarcoma was a possible diagnosis, but it might have to be taken into account.

Case of (?) Syphilitic Ulceration of Soft Palate Occurring During a Course of Antisyphilitic Treatment.

Shown by Mr. Atwood Thorne. The patient, a man aet. 23, contracted syphilis in May, 1901, since when he had been treated with mercury, and latterly with mercury and potassium iodide by the mouth. After eight months' continuous treatment he was found to have deep ulcers on the soft palate, and despite active local treatment with silver nitrate the patient had got worse and lost his uvula and a part of the soft palate; he looked exceedingly ill and was very feeble. He complained that he had lost a great deal of flesh, and had some difficulty in swallowing. On examining the throat, the uvula and part of the soft palate adjacent to it were now missing, the edge of the remaining portion being covered with a dirty white slough, and on the posterior walls of the pharynx and on the posterior edge of the septum nasi there was a yellowish thickened exudate. Crepitations were heard at both apices, but no tubercle bacilli could be found in the sputum. Antisyphilitic remedies had been stopped, and every endeavor made to feed up and strengthen the patient.

Mr. Thorne asked for the opinions of the members on the nature of the case; personally he took it to be at any rate due partly to syphilis, but was surprised that the condition should commence while the patient was being actively treated for syphilis.

Dr. St. Clair Thomson would like to hear again what treatment

the man was having. He looked very cachectic, and as if he would not stand very much. He regarded the case as one of syphilis only.

Dr. Dundas Grant thought there was a tubercular element in this case. They knew that occasionally in secondary syphilis ulceration and destructive lesions occurred, but they were very uncommon. The very extreme ulceration occurring so soon in the course of the disease, together with the general characteristics of the patient, made one ask if there were any further evidence of tuberculosis.

Mr. Spencer said it might be a "mixed" case of tubercular-syphilitic infection. If the iodide were continued the man would certainly die. He recommended keeping the patient in bed and putting him on the "tonic" treatment; very little mercury should be given.

Mr. R. Lake thought it was a perfectly straightforward case of syphilis without any question of tuberculosis. He did not think twelve months so very short a period for even such extensive lesions as were present in this case, for ulceration might commence early and be followed by severe destruction of tissue when a case was going to be really severe.

Dr. Lambert Lack agreed with the previous speaker's remarks. It was purely a case of syphilis, and if the man were treated by being put to bed and fed on plenty of milk and eggs, with a little anti-syphilitic treatment, in a month he would be practically well.

Dr. FitzGerald Powell thought that large doses of iron and strychnine were very necessary in such a case as this. He had found that iodide of potassium and mercury in cases where a man was in an anemic condition were worse than useless. If it were possible he would send this man to the seaside, and as he improved in health, in addition to the iron and strychnine, he would give him just a little iodide of potassium and mercury; under this treatment he would soon get better.

Mr. Atwood Thorne, in reply, said that on examining the chest, he found distinct evidence of phthisis, but there were no bacilli in the sputum. While the man had the chancre, he was put on mercury, but during the last month a small amount of iodide had been added. He thought it was a mixed case and would feed the man up and give him small doses of iodide and mercury.

Case of Myeloma of the Nose in a Woman aged 30.

Shown by Mr. Waggett. The patient, previously quite healthy, began to notice nasal obstruction June, 1901, three months after confinement. Obstruction increased until, at the time of her visit, in October, the right side had become completely blocked, and epistaxis was frequent.

On examination the right nostril was found to be filled by a large dark red growth, with an intact smooth surface, feeling elastic to the touch, but bleeding readily. The right eye was more prominent than the left. Under an anesthetic the large tumor, which completely filled the nose, was removed piecemeal and without serious hemorrhage. The tissue was dark in color, of firm consistency, and contained a sponge-work of bony trabeculae.

Microscopic examination showed the structure to be typical of myeloma, containing numerous giant-cells (specimen exhibited). During the operation it was found that the growth had created a smooth-walled pressure cavity encroaching upon the orbit. Proptosis disappeared within two days of operation. In consequence of the microscopical diagnosis of tumor of only a local malignancy, a more radical operation was undertaken a few days later.

The seat of origin of the growth seemed to be in the region of the middle turbinate or of the unciform process. Rouge's operation was therefore performed, the anterior wall of the antrum and part of the septum were cut away, and the greater part of the inner wall of the antrum and of the inner wall of the orbit was removed.

The exact anatomy of the parts, deformed by encroachment of the tumor and obscured by free hemorrhage, could not be determined, but apparently a thorough removal was made of all suspicious tissue. Free access could not be obtained until laryngotomy had been performed and the gag removed from the mouth. Apart from the effects of orbital hemorrhage the patient did not suffer much from the operation, and healing took place within the nose very rapidly. This process was accompanied by so marked and rapid a diminution in the size of the cavity that suspicion was aroused that the restriction was due not merely to cicatrization, but to recurrence of the growth. Opinions were invited upon this question. Against the diagnosis of recurrence were the healthy

appearance of the mucous membrane, the absence of epistaxis and want of any noticeable change during the last six weeks. The general health was excellent and pain absent.

Mr. W. G. Spencer would not say that the growth had recurred, he would wait till it bled continuously, for these tumors were very vascular. The nose required to be kept very clean as in atropic rhinitis.

Dr. H. Lambert Lack asked if the nose was still gradually closing, because if that were so it might be due to recurrence. He did not think it would be possible to do any more if a recurrence took place.

Mr. E. B. Waggett said, in reply to Dr. Lack, that he thought the contraction took place during the first month, and that it was not contracting now. Three months had now elapsed since the operation. The contraction was especially noticeable in the region of the right choana where the septum seemed to pass away into the outer wall of the nose, which was precisely the part not affected so that he was in hopes that the structures were cicatricial and not evidences of regrowth.

Case of Abeyance of Nasal Breathing in a Female aged 23; Nasal Passages Free; Hysterical Aphony; Rhinalgia.

Shown by Dr. Pegler. The patient had been shown in 1899 for functional aphony and recurrent apsthyria, which still persisted. Soon after that occasion she had developed mouth breathing, and her speech, though aphonic, became "clipped," a defect known as Rhinolalia clausa. There being a pad of adenoids and considerable turbinal hyperthropy in both chambers, these impediments to nasal breathing had been radically eliminated, but instead of the patient gaining any benefit, the above-named symptoms grew worse, and so they remained. Rhinalgia had been much complained of, especially recently; the mouth was always open, and the breath was peculiarly disagreeable, possibly owing to this fact. Before speaking, with a view, perhaps, to getting some use of her nose, she made a clicking kind of sound with her palate. The velum, on inspection, appeared paretic, but the exhibitor had no hypothesis to offer, especially in the light thrown upon his case by the next one, except that the nasal breathing and resonance were shut off by spasmodic contraction of the soft palate.

The photograph marked 1 showed this patient before her

various hysterical symptoms set in, and when she was teaching in a school; the mouth was closed, and the expression highly intelligent. No. 2 photograph had been taken recently, and showed a very marked deterioration in this respect, with open mouth and dilated alae nasi.

The President thought it a "hysterical" case. One had seen such cases, in which people occasionally talked without using their noses, although there was no obstruction, and were unable to pronounce "m" and "n," and converted these letters into "b" and "d." He put down similar cases he had seen to neurosis of the palate. Dr. Pegler thought that in his case there was a spasm of the palate, but whether that was proved or not he was not aware.

Dr. Scanes Spicer thought this case a very important one. Dr. Pegler had quite satisfied him personally that there was now no organic obstruction, and yet, when the mouth was closed, no air entered on the patient attempting to inspire. After a time, unable to do without air any longer, she opened the mouth and violently inspired. The explanation appeared to be a functional spasm of the soft palate and pharynx—a hysterical contraction at a time when normally there should be a relaxation or yielding to the incoming air-current. It might otherwise be regarded as a hysterical holding of the breath by the soft palate. There was evidence of hysteria in the adductor laryngeal paralysis, so that apparently there was in this palatal spasm another instance of perverted respiratory rhythm parallel to what was occasionally seen in the larynx in hysterical subjects. The case demonstrated without any organic obstruction in the nasal passages to compel such abeyance. He thought the patient would be benefited by treatment of the causes of obstruction he had pointed out. Perhaps stretching the soft tissues of the alae, followed by the use of rubber dilators at night, and education of the dilator muscles, would be ample. As to the soft palate in this case, he thought it was paretic rather than spastic.

Mr. Waggett suggested that the woman should be treated like a hysterical person with aphonia, namely, by forcing her to breathe through her nose by shutting the mouth and tying it up.

Dr. Fitzgerald Powell said that as the patient could blow out a spirit lamp held under the nose whilst her mouth was closed, there could be no real obstruction. Apparently the soft palate seemed

to suffer from some neurosis just in the same way as the cords suffer from neurosis in functional aphonia. There was a greater or less degree of post-nasal catarrh with a good deal of mucus coming down from behind, and probably the palate was in a more or less rigid condition. He hoped to be able to show a similar case at a future meeting suffering from functional obstruction to the breathing. The nose had been cleared of all objective causes of obstruction, but nevertheless the breathing had become worse.

Dr. William Hill thought that in this case there was a want of co-ordination between nasal inspiration and the muscular actions of the palate and pharynx.

Mr. Atwood Thorne said that as the patient had a good current of air up and down both nostrils, he would advise breathing exercises with a forcibly closed mouth, and the usual general treatment for hysteria.

Dr. Dundas Grant said that in this case there was a condition of anesthesia; as the patient did not feel the air which passed through the nose, she therefore did not think it did pass.

Dr. Jobson Horne inquired whether the possibility of tuberculosis had been entirely excluded as a factor in the aphonia.

Dr. Pegler agreed with Dr. Hill, and thought the term hysterical inco-ordination of the muscles of the soft palate and pharynx would supply what was wanted in that regard. It was remarkable that since the nasal operations the symptoms had been aggravated; this might be due to the influence of auto-suggestion.

**Case of Abeyance of Nasal Breathing, the Passages Being Free,
Palate and Fauces Hyperesthetic.**

Shown by Dr. Pegler, A. G., aet. 31, came to the Metropolitan Ear, Nose and Throat Hospital a few days ago complaining of her speech. ("Her bother said there bust be subthig the batter with her throat, because she always spoke through her dose.") Patient dated the defect from November last, when she was sent to the North-Eastern Hospital as a case of supposed diphtheria. On her return she states that in drinking fluids returned through her nose. Dr. Cuff, however, assured the exhibitor that the case was one of tonsillitis only; and that three separate cultures failed to disclose any Klebs-Löffler bacilli.

The mouth is kept open constantly. Examination of the nose and naso-pharynx gives a negative result insofar as explaining

the total absence of nasal breathing and resonance were concerned. The pharynx was so irritable that repeated cocainization was necessary in order to gain a satisfactory inspection of the post-nasal space. There was no nasal anesthesia, but pain was complained of over the bridge. There was paresthesia of the pharynx in the form of a pricking sensation in the throat, and the patient was constantly "clicking" and "hemming." Following the suggestions made in Dr. Lermoyez's paper on a similar case, Dr. Pegler closed the patient's mouth with his hand, when she held her breath till cyanosis set in, but after a violent effort the patient respiration through the nose. Suspecting that palatal spasm was operating here as in the last case, Lermoyez's other experiment was tried, and the palate tied up by a tape passed through the nose, naso-pharynx, and mouth, the two ends being secured over the upper lip. After a slight effort the patient breathed comfortably through the nose, her mouth being closed. The (moral) effect of this treatment was permanent, for the speech defect was now nearly absent. The photograph marked A shows this patient prior to her throat attack; the mouth is closed and the features natural. B shows the patient taken previous to treatment the other day, and is in obvious contrast to the former one.

Dr. Scanes Spicer took exception to Dr. Pegler describing the air-passages in this case as being entirely free, since insufficiency was proved by marked collapse of right ala on inspiration. There were three objective cases of obstruction: 1. The right nostril was a slit, and the ala collapsed on that side on attempting inspiration. 2. The septum was deflected, the deviation being sigmoid. 3. There was enlargement of the right middle turbinate with dry crusts. Certainly this case could not be placed in the same category as the previous one.

Dr. Vinrace said that regarding the doubt as to whether this patient had had diphtheria, he would like to point out that the regurgitation of fluids through the nose after the attack was, to his mind, stronger evidence in favor of diphtheria than the failure to find bacilli was against it. He would like to know whether this condition was or was not the result of diphtheria.

In reply to Dr. Vinrace, Dr. Pegler said he was content to accept Dr. Cuff's assurance with regard to the absence of diphtheria, besides which no point was made supposing the disease had ex-

isted; there might have been a paretic palate in the first instance, but the speech and breathing defect pointed to the opposite condition of spasm.

Dr. Vinrace remarked that if one searched for the bacillus and failed to find it, it did not follow that the patient had not had diphtheria.

Dr. Pegler, replying to Dr. Scanes Spicer, said he was sorry that he could not persuade that gentleman to regard the case in the same light as he did. The unilateral insufficiency was not of a kind that he should treat by operation, seeing that an armed probe passed comfortably through the narrower chamber, whereas in the companion one he was able to discern the pharyngeal wall easily without the aid of cocaine. As in the previous case, he looked to the vagaries of the tensor and levator palati muscles for an explanation of the phenomena, and thought the simple experiment of tying up the palate was conclusive in its result. Kyle alluded in his book to spasmodic affections of the palate, and in this case there were other evidences of choreic or spasmodic action in the upper air-passages. The inspection of the larynx showed contraction of the ventricular bands in phonation, which perhaps explained the hoarseness of the voice.

Case of Progressive Ulceration of a Nose.

Shown at the last meeting by Dr. Bennett. It had been suggested at the last meeting that the ulceration of the septum might have been due to antral suppuration. Dr. Bennett had therefore explored, but found no discharge.

Case of Edema of the Larynx With Thickening of Palate, Uvula, and Fauces in a Boy aged 10.

Shown by Mr. F. Hunter Tod. This case was under the care of Dr. Percy Kidd at the London Hospital. The boy's mother had noticed that for two years he had breathed through his mouth, and was very noisy in his sleep. Between October and December, 1900, he had had four operations on the tonsils and the back of the throat, but without relief. There had been wasting and day and night sweats, and difficulty in breathing at night.

At the present time the patient was thin, pale and pigeon-chested. There was slight bronchitis, but no signs of pulmonary phthisis. The temperature was normal. No bacilli had been found in the sputum. There were no signs of congenital syphilis. There was

laryngeal stridor, which was much worse at night, accompanied by retraction of the chest, but cyanosis had never occurred. Examination of the larynx showed enormous enlargement of the epiglottis, which was smooth and of a pale color, and prevented a view of the anterior of the larynx being seen. The tips of the arytenoids could be seen, both, but especially the left which seemed fixed in the middle line, being pale and much swollen. No ulceration was visible. The condition had remained unchanged since admission to the hospital four weeks ago. The uvula was much enlarged and edematous, and there was considerable thickening of the palate and fauces. Mr. Tod suggested that the diagnosis rested between tubercular laryngitis and congenital syphilis, and that the patient should be fed well and given antisyphilitic treatment, and that tracheotomy should be performed if it should become necessary.

The President said the condition reminded him of congenital syphilis.

Mr. Spencer said this was an interesting case, but he did not know what its origin was. There was some danger of his dying of suffocation suddenly one night. Something ought to be done to avoid this; for instance, tracheotomy combined with rest for a time, and careful treatment on the same lines as those proposed by Hunter Mackenzie for laryngeal growths in children. One might, in addition, remove the tonsils, and the lower pharynx, including the epiglottis, might be lightly scarified, and astringents rubbed in or cauterized.

Dr. Dundas Grant asked if any albumin had been found in the urine. He had shown a case (March, 1897) to the Society of a boy who had had scarlet fever, with subsequent albuminuria, in which the edema persisted very much as it had done in Tod's case, although he had some suspicion that the boy was the subject of inherited syphilis. He asked whether tuberculosis had been excluded in Mr. Tod's case. Tuberculin might afford information in a case of great doubt.

Dr. Powell considered it a case of hereditary tertiary syphilitic infiltration, and would like to hear if the boy had been put on anti-syphilitic treatment. If not, he suggested that the boy's general health should be attended to by tonics, and that then antisyphilitic treatment should be employed. If there was any danger of laryngeal spasm tracheotomy ought, of course, to be done. At present there did not seem to be any spasm.

Mr. Lake said he would give the boy Hyd. c. Creta.

Mr. Hunter Tod said that Dr. Percy Kidd was inclined to think that it was a case of tubercular laryngitis, although there was no sign of pulmonary phthisis nor tubercle bacilli in the sputum. He had not been put on antisyphilitic treatment because he wished to see the effect of good diet and tonics. On admission there was so much laryngeal obstruction that tracheotomy was nearly performed, but at present there was no danger of suffocation as the boy could sit up all day quietly, and could sleep all night in the recumbent position.

Ethmoidal Suppuration in a Man Complaining of Excessive Pain.

Shown by Mr. Waggett. The patient had been under treatment for some years. The greater part of the ethmoidal cell region had from time to time been removed. Both frontal sinuses had been opened and found healthy. Very severe frontal and vertical pain was complained of, and suggestions for treatment were asked for. A marked neuropathic element was present.

Dr. Vinrace wished to know what were the indications for the operative treatment of the frontal sinuses which had been resorted to twice in this case, and what were the beneficial results which were claimed after each of these two operations. Further he did not see why the left side had been interfered with when it was the right side on which there was the nasal obstruction. In the first instance it seemed that vertical headache was the prominent symptom, and in the second instance there was supra-orbital pain on the left side; and subsequent to the second operation, new symptoms had been introduced, and he would like to know if these were to be attributed to the second operation. As far as he could ascertain the sight had been affected and the patient was very giddy. It was very gratifying to him to hear of such good results following these operations, but the perplexing point was that, according to the account of the patient, when the first operation was done, the only pain he had was that of vertical headache, there being an absence of symptoms in the region of the frontal sinuses.

Dr. Lambert Lack thought the man had now had sufficient done to the nose, and the results of the operations were good. The man was now suffering from neurasthenia.

Dr. Jobson Horne said that this man was under his care for some few weeks after being under the care of Mr. Waggett, but he could

find no sufficient cause for operating, and he thought that was the reason why the patient left him. The patient seemed to attach too much importance to his symptoms, and he advised him to undergo no further treatment for a while.

Dr. Fitzgerald Powell said that this man had also visited him. He came to him after leaving Mr. Waggett, but he had only seen the man once; he did not recommend active enough measures. It was evident that there must be some considerable amount of pain in the frontal sinuses or forehead, whatever might be the cause of it, or he would not be so persistent in complaining of it. He suggested to Mr. Waggett putting in a seton, as in some cases frontal headache had been considerably relieved thereby. If the patient had remained under his care, he would have put in the back of the neck an ordinary tape, which might have had the effect of removing the pain to some extent. He would like to hear whether the frontal sinuses had been obliterated by operation.

Mr. F. H. Westmacott asked whether it was not an experience quite commonly found after operation in cases of frontal sinus disease that the patient did very well for a time; the discharge ceased and the patient became apparently well. But after a time there was a periodical recurrence of the symptoms as regards the pain, etc., and yet on looking into the nose there was nothing, or very little, to account for the recurrence. In one or two such cases he had given considerable relief by simply passing up a cannula into the infundibulum and inflating the frontal sinus, after which the pain went away instantly. If in two or three weeks the patients again complained of their pain he repeated the process and with the same temporary success. He had come to look upon this state of affairs as very largely due to neurotic causes. There might be some foundation for the pain no doubt in local congestion.

Mr. Waggett said that this man had in the first place ethmoidal suppuration, and in the second place he was undoubtedly a hypochondriac of the worst type. He had treated him according to the rules of rhinology, with the exception that he had not yet explored the sphenoidal sinuses. The frontal sinuses were explored as severe frontal pain and tenderness were experienced, and the ethmoidal cells in the neighborhood were suppurating.

Case of Subjective Nasal Obstruction.

Shown by Dr. Dundas Grant. Miss E. E., aet. 34, was first seen by Dr. Dundas Grant on February 6, 1902, when she com-

plained of a feeling of suffocation and inability to breathe through the nose. The right nasal passage was almost normally free, and the left one patent to an abnormal degree. There was considerable atrophy of the left inferior turbinate body, the posterior wall of the pharynx and the "arcade" of the posterior choana being visible to a considerable extent. There was a very slight tendency to alar collapse, but not sufficient to interfere with breathing. The mucous membrane was abnormally tolerant of manipulation with the probe, and in fact there was a considerable degree of anesthesia. The exhibitor attributed the subjective obstruction to this anesthesia. The patient did not feel the air passing through the nose, and had consequently acquired a fixed idea that it did not do so, and that she could therefore only breathe through the mouth. Dr. Grant said that this was the mechanism of many cases of subjective nasal obstruction.

Dr. Scanes Spicer was of opinion that there was marked insufficiency of passages in this case, due to stunted evolution of the nostrils, and there was collapse on inspiration. He thought the insufficiency would be overcome by dilation, wearing rubber tubes, and re-establishment of normal action of nasal inspiratory muscles. When this was done he believed, from his experience of similar cases, that the patient's sense of stuffiness would disappear.

Dr. Dundas Grant said the patient was a very highly neurotic subject, and there was some, though not very great, tendency to collapse of the alae. The left nostril, in his opinion, was at all events abnormally patent, and there was ample room for breathing purposes if only she were conscious that the air could go through. Considerable anesthesia of the nasal mucous membrane was present on both sides, and he believed this was a large factor in many of these cases.

A Specially Constructed Glass Tube for the Inhalation of Medicinal Powders into the Larynx.

Shown by Dr. Dundas Grant. A glass tube of about 6 inches in length is bent at one end into a crook of about $\frac{1}{2}$ inch, while $2\frac{1}{2}$ inches of the other extremity are bent downwards at an obtuse angle. The short crook, lying downwards, is pushed by the patient to the back wall of the pharynx, and the opposite extremity is allowed to dip into a small quantity of light powder in a watch-glass or plate; the patient then closes his lips and draws in his breath

rapidly through the tube so as to inspire some of the powder. This, following the inspiratory blast, finds its way, according to the inventor of the method, into the larynx. It is a method of great simplicity, and has the advantage that it can be carried out by the patient himself under the direction of his medical adviser. Its inventor, Dr. S. Leduc, of Nantes,* strongly recommends the use with it of the powder known as di-iodoform, and he deprecates the employment of crystallines such as those of ordinary crystallized iodoform. Dr. Dundas Grant had used with it orthoform and resorcin, and had seen by the laryngoscope the powder adhering to the interior of the larynx. It had given great relief to several patients with laryngeal phthisis to whom he had given it.

Dr. A. J. Hutchison said that these tubes were not new, for he had known of them for four years. They were brought out first on the continent, either in France or Germany. To the small extent he had employed them he had found them very useful.

Wooden Probes and Cotton Carriers.

Shown by Dr. St. Clair Thomson on January 10, 1902. Dr. Thomson had met with these wooden probes in a throat clinic in Germany last summer. There was nothing particularly novel in them beyond the fact that they were remarkably cheap and reliable. They were cheap because they were originally manufactured wholesale for use in the making of sausages, and were known as "Wurststabchen," and were carefully sterilized under government control. They could be cut in suitable lengths, and were useful as probes for applying caustics, as cotton carriers, and for other purposes. When cotton-wool pledgets had to be left in the nose, it was much easier for the patient to remove them if the cotton were first wound round a wooden probe which was then cut off flush with the orifice of the nostril. These wooden probes were kept in stock by Messrs. Mayer and Meltzer, and by Mr. Rogers, of Oxford street.

*See "La Gazette Medicale de Nantes," November 16, 1901.

SELECTED ABSTRACTS.

Epistaxis.—A. C. TENNEY—*The Clinique*, Nov. 1901.

The author reviews the etiology as given by the various textbooks. In the treatment of those cases resulting from hemophilia, the author very strongly recommends the giving internally of large doses of the distilled extract of hamamelis. "The dose varying from thirty or sixty minimis to two or three drachms every half hour," until the hemorrhage is controlled or nausea is produced.

STEIN.

Rhinoliths.—J. W. SMITH—*Illinois Medical Journal*, Dec. 1901.

The case reported is a child of four years and eleven months. The concretion weighed eight grams, and was found imbedded in the tissues of the right inferior meatus. (The age of the child makes the case unusually interesting.—Stein.)

STEIN.

Are the Tonsils to be Regarded as Normal Physiological Organs of the Body?—FRANK H. BOSWORTH.—*N. Y. Med. Record*, January 11, 1902.

Some twenty years ago the author stated that there are no tonsils in a healthy throat, and his experience since then corroborates that statement. Hyperthropy of these lymphatic bodies constitutes a distinct menace to the health and welfare of the body in the filthy launae which make up its main bulk. The indication is to remove these bodies in a thorough manner. The author employs the cold wire snare, and finds it a better instrument than the tonsillotome. For a general anesthesia in children, chloroform has been used for twenty-five years, and no dangerous tendency or symptom has been observed.

LEDERMAN.

Removal of the Tonsils by Enucleation.—ST. CLAIR THOMSON
(Lancet) Feb. 16, 1901.

At a meeting of the Medical Society of London, on February 11, Dr. StClair Thomson exhibited two cases to show the desirability in certain cases of removing the tonsils by enucleation. The first patient was a woman, aged thirty-eight years. In 1894, she was in close attendance on her husband, who was very ill with tonsillitis and a foul discharge from his throat. Soon after she noticed in her tonsils cheesy collections of offensive taste and fetid odor. The local conditions were very similar to those presented by her son, who was the second case shown at the same time. For this condition she was under continuous treatment for three years. During two years she attended Dr. Thomson's clinic, and was actively treated with gargles, paints, lozenges, caustics, the galvano-cautery, and incisions laying open the tonsillar crypts. At the same time attention was given to her digestion and general health. She remained unrelieved. Accordingly, two years ago the embedded tonsillar stumps were enucleated under chloroform, and she had since been quite free of the chronic fetid follicular tonsillitis which had been such a persistent nuisance. There had been some regeneration of lymphoid tissue between the pillars of the fauces, but there were no crypts in which these cheesy septic concretions could form. The patient found that her voice had not in any way been injured, but rather improved, for singing. The second patient was the son of the former one. He was a boy aged ten and a half years. When four years old his tonsils were noticed to be enlarged, and they were removed at the Throat Hospital. He was not again troubled with them until after scarlet fever, at the age of six years, when they were again enlarged and were removed with the guillotine at the Throat Hospital by Dr. StClair Thomson. A few months later cheesy collections were noticed in the crypts of the tonsils, and these had since continued almost without intermission. He was under treatment from September to December last. The chief complaint was of his foul breath, which was said to be most marked in the morning, but was perceptible when he was asleep with his mouth closed. The tonsil stumps were seen to be deeply embedded between the faucial pillars. They were riddled with crypts, some of which were half an inch deep. From these crypts dirty white, fetid, cheesy matters were easily extruded. There were no adenoids. It was seen that it was impossible to thread these tonsillar stumps into the ring of the guillotine. In the pre-

vious case all attempts to obliterate the crypts failed. The choice of treatment, therefore, seemed to lie between punching out the remains of the tonsil by morcellement or enucleation, as in the former case. The mother of the boy was so gratified with the result in her own case that she was anxious for him to have the same treatment. The operation was performed under a general anesthetic, chiefly by a pair of curved scissors and the fingers.

ST. CLAIR THOMSON.

Follicular Tonsillitis.—R. C. BROWN, (Milwaukee).—*Med. Record*, March, 1902.

In an interesting paper, the author states that he is inclined to accept the theory of Packard, that different micro-organisms are capable of causing rheumatism. He does not believe, however, that the relation of tonsillitis to that affection is either cause or effect, but that the tonsillitis is produced by the same germs, the faulty or imperfect elimination of whose toxins causes the rheumatism.

In conclusion the author recapitulates as follows:

1. That follicular tonsillitis is not caused by a single microbe, but that many well-known micro-organisms are capable of causing it.
2. That the symptoms of tonsillitis are partly caused by an exaggeration of function.
3. That under the stimulus of infection the lymph corpuscles in the adenoid structure of the tonsil produce an antitoxin, but is antagonistic to invading germs.
4. That the characteristic symptom is an exudate, having no texture and non-adherent.
5. That the presence of the Klebs-Loefler bacillus is not positive evidence that the disease is not a simple follicular tonsillitis.
6. Lastly, that there seems to be some relation between follicular tonsillitis and the infectious diseases which is not yet properly understood; that whatever the function of the tonsil, it seems in disease to endeavor by its activity to assist nature in eliminating infection.

So-Called Follicular Pharyngitis.—H. L. BURRELL.—*Western Medical Review*, Nov. 15, 1901.

The author maintains that the so-called follicular conditions of the pharynx are improperly named; that the condition is essentially one of disease of the lymphatic tissue which is interspersed in the

form of distinct nodules throughout the deep layer of the post-pharyngeal mucous membrane. They are not follicles at all. The name lymphatic sclerosis of the pharynx is suggested as a more proper appellation.

STEIN.

The Tonsils.—ROBERT LEVY (Denver)—*N. Y. Med. Journal*, Oct. 12, 1901.

After careful experiments upon dogs Mangonly concludes that the tonsils bear an important relation to the blood, and that their integrity is an important factor in the struggle of the organisms against the invasion of germs through the mouth.

Ullman remarks that the normal tonsil has a protective function to the organism, but when this function is impaired, the gland then begins to be a nidus for the growth and distribution of pathogenic organisms in the system.

The author states that in the majority of instances in adults complete emulsion of the diseased tonsil should be performed. Amygdalotony will not suffice. The best method for complete amygdalotomy is by the galvano-caustic snare. In some cases dissection of the diseased tissue must be performed by properly constructed electrodes. Adhesions between the tonsils and pillars should be removed. In children amygdalotomy has its uses, for here the tonsillar tissue is not as yet pathologic, but in those cases in children, where recurrence takes place after such an operation, the radical procedure should be undertaken.

M. D. LEDERMAN.

Chronic Empyema of the Maxillary Sinus; Operation and Treatment.—J. A. STUCKY (Lexington, Ky.)—*Louisville Monthly Journal of Medicine and Surgery*, June, 1901.

In operating for chronic empyema, the opening through the canine fossa is advocated. The cavity is entered with a hand-drill or chisel, enlarged with Rongeur forceps until the finger can enter with ease. Granulations and polypi are removed with finger and curette, and partitions, if found, are broken down, so as to make one cavity. The sinus is carefully inspected with the aid of a large ear speculum, in order that nothing escape which might prove a source of infection. The cavity is then packed with gauze. This first dressing is allowed to remain for twenty-four hours, then removed and the cavity washed with an antiseptic solution (boric acid). This is repeated daily for several days.

For retaining the patency of the opening in the canine fossa, plugs made of flexible dental rubber are advocated. After three to six days, when it is no longer necessary to pack the cavity, an impression is made of the opening with dental composition, and a plug made. This should fit accurately the canine fossa, and allow the cheek to cover it comfortably. It should enter the cavity about one-third to one-half inch, curved a little upward and backward. As soon as the composition is hardened sufficiently, it is removed, smoothed up, and given the dentist to model in plaster of paris, and a plug of vulcanized flexible rubber made.

W. SCHEPPEGRELL.

Therapy of Chronic Empyema of the Maxillary Antrum and Our Method of Operating—DR. VICTOR ALSEN, *Archiv. fur Laryngologie*, Band XII, Heft 2.

The author begins with a brief description of the numerous operations which have been proposed in this condition, and cites the various drawbacks attending each. At the best, the results seem to be uncertain and unsatisfactory.

The technique of all the usual operations is too well known to call for repetition here, and the method adopted at Gerber's clinic seems to consist of a modification of several previously published procedures.

Following is Alsen's description of the operation:

A general anesthetic is always used. The upper lip is drawn upward with a Langenbeck's hook. Beginning at the level of the canine tooth, an incision is carried from near the median line to about the line of the zygomatic process. The cut must not be made too low, otherwise the mucous membrane will not suffice to cover the alveolar process. After the mucous membrane and periosteum have been pushed aside both upward and downward, and the hemorrhage (frequently severe) is controlled, the antrum is opened with chisel and mallet, and with the help of bone forceps almost the entire anterior wall is removed, with the exception of the infra-orbital border; so that a good view of the antrum may easily be obtained.

Now (with the aid of reflected light), the entire antrum is carefully curetted with a sharp spoon until we are sure that all the thickened mucosa, polyps, carious bone, sequestra and granulations have been removed. The hemorrhage is frequently abundant, but generally stops when the cavity is thoroughly cleared

out. Particular attention must be given to the region about the ostium and the furrow running along the alveolar process, as diseased tissue situated at these points is easily overlooked.

With a curved sharp spoon an opening is now made through the nasal wall into the middle meatus. The little finger of the operator's left hand is carried into the nostril and the opening is enlarged in a forward direction until the tip of the little finger can easily enter it. The edges of the bony wound are smoothed, and shreds of membrane, etc., removed with the sharp spoon, scissors and forceps. For drainage, use is made of a large strip of iodoform gauze which is carried from the antrum through the nasal wound, so that one end serves as a loose tampon from the antrum, while the other projects from the corresponding nostril.

In conclusion, the oral wound is carefully closed with stitches placed close together. We always begin at the external end of the wound, as it is the most difficult part to manage. During the first days after the operation there is a marked swelling of the cheek, which, however, disappears under the application of ice. The patient is at first allowed only cold liquid nourishment, and even this is taken through a glass tube in order to avoid stretching the wound in the mucous membrane. As a rule, the first strip of gauze is removed on the third day. Its reintroduction is easily accomplished by means of a probe bent like an Eustachian catheter. From now on the tampon is removed every day, and the cavity washed out with a boric solution or a weak solution of sublimate. The fluid at first contains clots of blood, pus, etc., but soon becomes clear. As a general thing the oral wound has healed at the end of eight days, and the stitches can then be removed. At the end of fourteen days the tampons may be omitted, and the treatment will consist of daily douches and insufflation of some powder, such as iodoform, dermatol, etc.

The counter opening into the nose is placed in the middle instead of the lower meatus, because a sufficiently large opening cannot be made in the latter situation without destroying the lower turbinal and giving rise to atrophic conditions.

The author is very moderate in his claims for this operation, and calls no case cured until the symptoms of empyema have been absent for $1\frac{1}{2}$ to 2 years. He has had five cures, and several are still under observation; but, while they are at present well, yet sufficient time has not elapsed for a final judgment.

In two cases where considerable caries was present in the walls, the results were not satisfactory, and A. does not recommend the operation for such cases.

The paper closes with the following propositions:

1. None of the operations hitherto employed can in any sense be called radical. Such an one should bring about a complete obliteration of the antrum by cicatrical tissue.
2. Inasmuch as no other method brings about a radical cure, and the after-treatment is accompanied by manifold disadvantages, it would seem that the operation here described is advisable because it attains the end in view more rapidly and pleasantly than the others.

VITTUM.

A Case of Sarcoma of the External Auditory Canal.—N. NIZZI
—*Bollett. delle mal. dell' orecchio, etc., No. 9, 1901. Rev. Heb. de Laryng. D'Otol. et de Rhinol., Dec. 7, 1901.*

From the clinical observation of a case of sarcoma in a boy of ten years, and from a careful analysis of the literature of this subject, the author formulates the following conclusions:

Primary sarcoma of the auditory canal and of the auricle are rare; secondary sarcoma, still more so. Both may appear irrespective of the age of the patient.

Sarcoma, in the early stages, may be confounded with several other affections of the auricular canal, and a correct diagnosis is absolutely impossible without the aid of the microscope. In every case in which we find a so-called polypus of the ear, it is well to make a microscopic examination, as nothing is more deceiving than its macroscopic appearance.

The extention of a sarcoma to the middle or inner ear is not always manifested by exact clinical symptoms, and the prognosis should therefore be guarded.

The prognosis, judging from the cases which have thus far been published is very favorable; however, if a radical extirpation is practiced in the beginning, we may obtain a cure of more or less duration. When a total extirpation is impossible on account of the extent of the neoplasm or general infection, surgical intervention is useless.

When the sarcoma is limited to the auditory canal, the operator should not simply remove the diseased area, but should make a very free extirpation of the surrounding tissues, as the most effective method of preventing a recurrence.

.W. SCHEPPEGRELL.

Complications of the Middle Ear.—E. E. CLARK (Danville, Ills.)

—*The Medical Standard*, Nov. 1901.

The author says "the tympanic cavity is a death trap" which catches far more people than many of us suppose. In the entire human economy there is not a single cavity which is of such vital relative importance to its neighboring structures as that of the middle ear. It bears such important relationship to all which lies about, hidden away as it is, deep down in the firmest and hardest bone of the body, that when diseased, it may be as a slumbering volcano or a quick and violently active earthquake. Next to trauma ear disease is most often responsible for brain infection and abscess. Every case of suppuration of the middle ear should be regarded as a serious disease.

ANDREWS.

The Advisability of Early Operative Intervention in Acute Mastoiditis; Report of a Case.—E. B. DENCH (N. Y.)—N. Y. Med. Journal, Oct. 19, 1901.

The case reported was one of acute inflammation of the left ear, complicating an attack of influenza in which the acute symptoms, mastoid tenderness and suppuration had ceased when the author saw the case, four months after the attack. At this time the hearing was growing worse, but no pain in the ear or tenderness over the mastoid existed. Catheter inflation was advised. Two months later the patient presented a fluctuation behind the ear, which, on being incised, revealed a pus cavity, with roughened bone at the bottom. There was but slight sinking of the upper part and posterior wall of the canal, in fact no further indications of mastoid involvement than at the previous examination, when a diagnosis of retarded resolution was made.

A typical mastoidectomy was performed at once, and the mastoid cells were found completely filled with granulation tissue. The trabeculae between the cells were found carious, and the tip was soft. Good results followed.

The author takes the radical position, and advises an immediate operation in every case where we have any evidence of mastoid involvement, even if it be simply for the purpose of exploration.

M. D. LEDERMAN.

Some Aural Complications of Influenza.—S. MACCUEN SMITH (Phila.)—Penn. Med. Journal, Oct. 1901.

The author states that hemorrhagic otitis is believed to be the distinguishing feature of otitic influenza. Clinically there is a

severe myringitis, hemorrhagic in character, with the formation of bluish-red extravasation, forming dark-colored bullae, which contain a bloody serous fluid. Areas of ecchymosis are also seen in the walls of the external canal.

Mastoid complication, or irritation is present in all severe cases, and the percentage of cases requiring operative intervention is unusually large. Two cases were operated upon by the author of primary mastoid disease in which the tympanic cavity was but mildly involved in the form of a slight hyperemia. In ordinary attacks of acute otitis media the pain is alleviated when escape of the confined fluid has been accomplished. In "grip" otitis, however, the suffering continues for a few days without much relief. This is especially marked when spontaneous rupture takes place instead of a timely free incision of the membrane.

The virulence of an aural discharge cannot be judged by its odor or the gravity of an otorrhea cannot be surmised by its chronicity. Bacteriological examination will indicate the infectious nature of aural discharge.

The part of conservatism is best served in these cases by an early incision of the drum. Antiseptic irrigation followed by gauze drainage, is the treatment advised.

M. D. LEDERMAN.

Notes on Diphtheria.—E. KEN HERRING (Shepparton, Vict)—
Australasian Med. Gaz., Sept. 20, 1901.

With a courage only equalled by his idea of proper economy in the use of antitoxin, the author runs astil against a present fashion of medicine, and asks: "The bacillus and the antitoxin are ornamental and useful, but are they necessary?"

To this he replies by pointing out that the more modern textbooks include all membranous inflammations of the fauces, pharynx and larynx under the term diphtheria, and that "the practitioner, therefore, may honestly avoid the time and trouble, and expense of getting a definite diagnosis of the bacillus from an expert, and yet, without injustice to the statistics, report all his membranous inflammations as diphtheria."

His experience shows him that one can get along very well without much antitoxin—at least in the country in Australia, as it is conceded that the disease there is much milder than in England, for laryngeal infection is rare in Australia.

On these grounds he argues for the use, at the beginning, of a less expensive treatment.

This is resorcin swabbing. It is not new, but the author considers that it is not "known aright." He uses a solution of a dram to the ounce of water applied warm with a brush or swab by a nurse or "other strong-minded person." The strength sometimes needs to be doubled, but rarely if thoroughly applied, and is warm. He has treated fifty cases in the last three years in this way without a failure. Antitoxin has been required in three cases only.

He cites eight cases of diphtheria in which the infection was communicated by musical mouth organs to children.

EATON.

Note on the Administration of an Anæsthetic to a Patient with Double Abductor Paralysis.—OTTO F. GRUNBAUM, *Lancet*, March 2, 1901.

Patient, aged 24, was admitted for operation for hematocele. He stated that he thought his heart was weak, as he was breathless on exertion. No disease was found, and the anesthetic was commenced. The patient took gas well; he passed under the influence of ether, and had nearly lost the cyanosis due to the gas when he ceased breathing. A gag was inserted and his tongue was drawn well forwards, but, no signs of voluntary respiration occurring, artificial respiration was resorted to without delay. Since the pupils continued to dilate while the passage of air into the lungs was accompanied by considerable noise, tracheotomy was suggested, but not performed, because the nature of the puff of air pressed out of the thorax during artificial respiration proved that there was a satisfactory air entry. Five minimis of liquor strychnine were injected. Two minutes later the pupils began to contract, and after six minutes voluntary respiration with loud stridor began. Shortly afterwards the patient regained consciousness, and recovered sufficiently to sit in a chair before the fire. He continued to gasp for breath, but showed that he had returned to sense and sensibility by a refusal to inhale any medication. The stridor gradually decreased, and forty minutes later it had disappeared. The following day the patient was feeling quite well. The character of the dyspnea which occurred undr anesthesia suggested some laryngeal stenosis. On questioning the patient further about his breathlessness on exertion, it was elicited that any exertion produced noisy stridulous breathing, and, further, that this difficulty had existed as long as he could remember.

On the 14th Dr. J. B. Ball was asked to examine the patient. He

reported that both vocal cords lay near the middle line, and on deep inspiration approached each other slightly, still further narrowing the glottic aperture. The condition appeared to be that of complete bilateral abductor paralysis. The appearance was not exactly typical, as there was a slight obliquity in the line of the glottic aperture.

The object of recording the case is to add to the list of pathological conditions which may lead to death during the administration of an anesthetic, but which (without exceptional examination) may not give any evidence of their existence during life or on the post-mortem table, however minute an investigation be made.

ST. CLAIR THOMSON.

Case of Extirpation of the Larynx for Epithelioma.—GEO. T. HANKINS (Sydney)—*Australas. Med. Gaz.*, Sept. 20, 1901.

About three months before admission to the hospital, the patient was operated upon for malignant glands beneath the angle of the jaw on the left side. On admission there was pain and difficulty on swallowing, hoarseness and cough. The thyroid cartilage was pushed over to the left. Laryngoscopic examination showed a mass involving the right side of the epiglottis, extending along the aryteno-epiglottic fold and obscuring the view of the interior of the larynx.

Tracheotomy was performed and the administration of the anesthetic continued through the tracheotomy tube. The larynx was plugged with gauze. A transverse sub-hyoid incision was made from one sterno-mastoid to the other, the thyro-hyoid membrane divided, and the epiglottis turned out through the wound. The growth was then brought well into view, and involved the right side of the larynx up to the middle line. The vocal cords were not implicated.

A vertical median incision was then made from the first incision to the tracheotomy wound, and the perichondrium, together with the superficial soft parts, peeled from the thyroid, the superior cornua of the thyroid cartilage divided, and the larynx dissected downwards from the esophagus. The trachea was then divided just below the cricoid cartilage and the larynx removed. The upper end of the trachea was then stitched to the skin and the pharyngeal wound closed by sewing mucosa to mucosa and skin to skin. An opening was left on the left-hand side through which a rubber catheter was passed into the esophagus. Hemorrhage was quite unimportant.

Patient went on well for six days, when pneumonia set in. The violence of the coughing broke down the union between the flaps, leaving a large triangular opening into the pharynx. On two occasions there was cyanosis, the respiration becoming unembarrassed, but the pulse 140. Patient recovered.

EATON.

Does Comparative Physiology Give an Answer to the Question as to Proportional Relation Between Singing Power and the Structure of the Singing Organ?—DR. GEORGE AVELLIS
(Frankfort-on-Main), *Archiv fur Laryngologie*, Band XII, Heft 2.

The Laryngoscope gives us no information as to a peculiar laryngeal conformation in the case of singers. In two instances the larynges of well-known singers were found provided with muscles of unusual power, but this is by no means the rule.

The author investigated the singing organs of various birds with a view to ascertain whether those birds which possess a most flexible voice were provided with a larynx that differed widely from that of birds not so gifted. The investigations resulted in nothing definite, and Avellis comes to the conclusion that in human beings the power of singing depends, not on the structure of the larynx, but on the mental and intellectual bent of the individual, and that we have no more reason to expect a special conformation of the larynx of a singer than we have to expect the same in the hand of a skilful player on the violin.

VITTRUM.

The Relation of Outdoor Life to High Altitude Therapy.—CHAS. DENNISON (Denver)—Reprint From Transactions of the Colorado State Medical Society, June, 1901.

The detail of this paper, by the well known authority on climatology, precludes a complete reflection within the limits of our abstract space. It should be read in entirety. The author makes a strong argument tending to emphasize the beneficent effect of open air as the curative agent in tuberculous conditions; in confined space the climate of Colorado offers no advantages. The loss of oxygen in confined space counterbalances any good mechanical effect from lessened atmospheric pressure upon the blood circulation or upon the respiratory organs. Deficient ventilation is the keynote of the cause, as is out-door living, or perfect ventilation, the keynote of the cure of tuberculosis.

F. C. E.

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BOOK REVIEW.

History of the Diseases of the Pharynx. (*Histoire des Maladies du Pharynx.*) By DR. C. CHAUVEAU, with a preface by DR. DU CASTEL. In Three Volumes. Published by J. B. BAILLERIE ET FILS, Paris.

The thoroughness of this work may be understood when it is stated that although limited to the history of only one branch of Oto-Laryngology,—viz., diseases of the pharynx—the three volumes contain a total of 1,328 pages of succinctly written matter!

The author believes that observation is more useful than theoretical dissertations, and, in searching the archives of medical literature, he has carefully selected the most practical records of diseases of the pharynx, giving, in some cases, the full text of the author while in others, of less importance, limiting himself to a short synopsis. The thoroughness with which he has exhausted the literature of the subject makes this work not only a veritable curiosity in medical literature, but also an encyclopaedia of this branch of the subject.

In the first volume is considered the Greco-Roman and Byzaantian and Arabian Period, while in the second and third the Arabian, mediaeval and modern, the latter including the Renaissance and the seventeenth and eighteenth centuries. The first is remarkable for the observations made by the Greek physicians in the clinical pathology of this subject, and whose influence was felt by their successors as late as the eighteenth century. In the modern period was first enunciated the real pathological anatomy and in this period the surgery of the pharynx has made its most remarkable progress.

In the third volume, the author has several hundred pages of the Latin text, in which the original words were written. As the Latin used at this period for medical literature is exceedingly simple and without the more complicated syntax of the classics, it makes a valuable addition to this interesting work.

W. S.

